

SUPPLEMENT.

The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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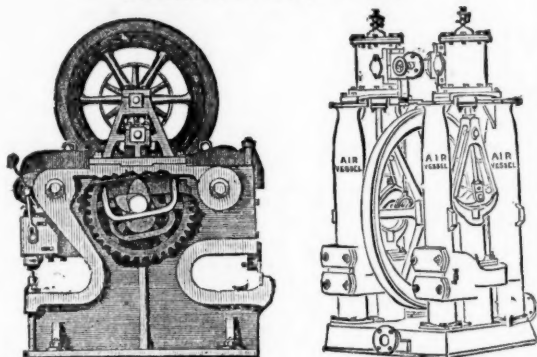
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AND 10, MARSDEN STREET, MANCHESTER.



PARIS,
BRONZE MEDAL, 1867.



ORDER OF THE CROWN OF PRUSSIA.



FALMOUTH,
SILVER MEDAL, 1867.

A DIPLOMA—HIGHEST OF ALL AWARDS—given by the
Geographical Congress, Paris, 1875—M. Favre, Contractor, having
exhibited the McKean Drill alone as the MODEL BORING MACHINE
for the ST. GOTHARD TUNNEL.

SILVER MEDAL of the Highland and West of Scotland
Agricultural Society, 1875—HIGHEST AWARD.

At the south end of the St. Gothard Tunnel, where

THE MCKEAN ROCK DRILLS

Are exclusively used, the advance made during eight consecu-
tive weeks, ending February 7, was 24'90, 27'60, 24'80, 26'10,
28'30, 27'10, 28'40, 28'70 metres. Total advance of south head-
ing during January was 121'30 metres, or 133 yards.

In a series of comparative trials made at the St. Gothard Tun-
nel, the McKean Rock Drill continued to work until the pres-
sure was reduced to one-half atmosphere (7½ lbs.), showing
almost the entire motive force to be available for the blow
against the rock—a result of itself indicating many advantages.

The GREAT WESTERN RAILWAY has adopted these
Machines for the SEVERN TUNNEL; the LONDON AND
NORTH-WESTERN RAILWAY for the FESTINIOG TUN-
NEL; and the BRITISH GOVERNMENT for several Public
Works. A considerable number of Mining Companies are now
using them. Shafts and Galleries are driven at from three to
six times the speed of hand labour, according to the size and
number of machines employed, and with important saving in
cost. The ratio of advantage over hand labour is greatest
where the rock is hardest.

These Machines possess many advantages, which give them
a value unapproached by any other system of Boring Machine.

THE MCKEAN ROCK DRILL IS ATTAINING GENERAL
USE THROUGHOUT THE WORLD FOR MINING, TUN-
NELLING, QUARRYING, AND SUB-MARINE BORING.

The MCKEAN ROCK DRILLS are the most powerful—the
most portable—the most durable—the most compact—of the
best mechanical devices. They contain the fewest parts—have
no weak parts—act without SHOCK upon any of the operat-
ing parts—work with a lower pressure than any other Rock
Drill—may be worked at a higher pressure than any other
—may be run with safety to FIFTEEN HUNDRED STROKES
PER MINUTE—do not require a mechanic to work them—are
the smallest, shortest, and lightest of all machines—will give
the longest feed without change of tool—work with long or
short stroke at pleasure of operator.

The SAME Machine may be used for sinking, drifting, or
open work. Their working parts are best protected against
grit and accidents. The various methods of mounting them
are the most efficient.

N.B.—Correspondents should state particulars as to
character of work in hand in writing us for information,
on receipt of which a special definite answer, with
reference to our full illustrated catalogue, will be sent.

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GREASE AND VARNISH MANUFACTURERS,
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AIR COMPRESSORS.

FOR DRIVING BED ROCK
TUNNELS, SINKING
SHAFTS, AND PERFORMING
OPEN FIELD OPERATIONS.

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STRONGEST, & MOST EFFECTIVE
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IMPORTANT NOTICE TO MINE PROPRIETORS.

MR. GEORGE GREEN, ENGINEER, ABERYSTWTH,
SUPPLIES MACHINES under the above Company's Patents for
DRESSING all METALLIC ORES. Dressing-floors having these Machines pos-
sess the following advantages:—

- 1.—THEY ARE CHEAPER THAN ANY OTHER KIND IN FIRST OUTLAY.
- 2.—ONLY ABOUT ONE-FOURTH OF THE SPACE USUALLY OCCUPIED
BY DRESSING-FLOORS IS REQUIRED.
- 3.—FROM 60 TO 70 PER CENT. OF THE LABOUR IN DRESSING, AND
FROM 5 TO 10 PER CENT. OF ORE OTHERWISE LOST, IS SAVED.
- 4.—THEY ARE THE ONLY MACHINES THAT MAKE THE ORE CLEAN
FOR MARKET AT ONE OPERATION.

They have been supplied to some of the principal mines in the United Kingdom
and abroad—viz.,

The Greenside Mines, Patterdale, Cumberland; London Lead Company's Mines
Darlington, Colberry, Nanthead, and Bollyhope; the Stonecroft and Greyside
Mines, Hexham, Northumberland; Wanlockhead Mines, Abington, Scotland (the
Duke of Buccleuch's); Bewick Partners, Haydon Bridge; the Old Darren, Esclair-
wynn, and Ystumtuen Mines, in Cardiganshire; Mr. Beaumont's W.B. Mines,
Darlington; also Mr. Sewell, for Argentinian Copper Mines, Peru; the Brats-
berg Copper Mines, Norway, and Mines in Italy, Germany, United States of
America, and Australia, from all of whom certificates of the complete efficiency of
the system can be had.

WASTE HEAPS, consisting of refuse chats and skimpings of a
former washing, containing a mixture of lead, blende, and sulphur,
DRESSED TO A PROFIT.

Mr. BAINBRIDGE, C.E., of the London Company's Mines, Middleton-
in-Teesdale, by Darlington, writing on the 20th March, 1876, says—"The yearly
profit on our Nanthead waste heaps amounted last year to £600, besides the ma-
chinery being occupied for some months in dressing ore-stuff from the mines. Of
course, if it had been wholly engaged in dressing wastes our returns would have
been greater; but it is giving us every satisfaction, and bringing the waste heaps
into profitable use, which would otherwise remain dormant."

Mr. T. B. STEWART, Manager of the Duke of Buccleuch's Mines,
Wanlockhead, Abington, N.B., writing on 20th March, 1876, says—"I have much
pleasure in stating that a full and superior set of your Ore Dressing Machinery has
been at work at these mines for fully a month, and each day as the moving parts
become smoother, and those in charge understand the working of the machinery
better, it gives increasing satisfaction, the ore being dressed more quickly, cheaply,
and satisfactorily than by any other method."

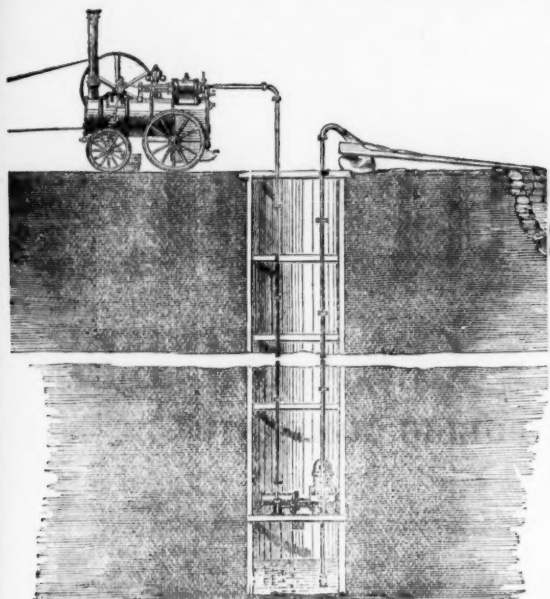
Mr. BAINBRIDGE, speaking of machinery supplied Colberry Mines,
says—"Your machinery saves fully one-half on old wages, and vastly more on the
wages we have now to pay. Over and above the saving in cost is the saving in ore,
which is a great much short of 10 per cent."

GREENSIDE MINE COMPANY, Patterdale, near Penrith, say—"The
separation which they make is complete."

Mr. MONTAGUE BEALE says—"It will separate ore, however close
the mechanical mixture, in such a way as no other machines can do."

Mr. C. DODSWORTH says—"It is the very best for the purpose,
and will do for any kind of metallic ores—the very thing so long needed for dress-
ing-floors."

Drawings, specifications, and estimates will be forwarded on application to—
GEORGE GREEN, M.E., ABERYSTWTH, SOUTH WALES.



THE "UNIVERSAL" STEAM PUMP,

FOR DEEP MINING AND COLLIERY PURPOSES, HAS NOW
STOOD THE TEST OF MANY YEARS' SERVICE, AND
OVER 7000 ARE IN USE.



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AUSTRIA.



FRANCE.



CORNWALL.



COLOGNE.

ECKINGTON, February 4th, 1877.
Messrs. HAYWARD TYLER and Co.,
GENTLEMEN,

In reply to your enquiry, the 15 by 7 Long Stroke Pump Messrs. Hayward Tyler and Co. supplied us with is working remarkably well; 7 feet suction, and forcing the water 180 feet perpendicular, with 40 lbs. of steam.

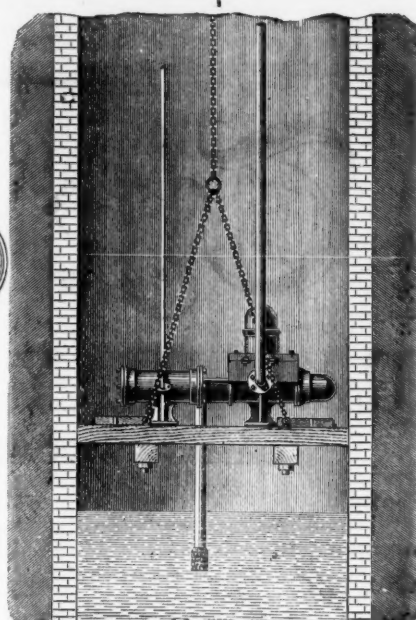
Before putting this engine in we had one H.P. Pumping Engine, 50 inch cylinder, 9 feet stroke, and firing six boilers, 36 feet by 4 feet, to drive it, now we only require two of the above boilers to do the same work with much less annoyance and attention.

I am, Gentlemen, yours truly,
JOHN MARPLES,
Engineer to J. and G. WELLS, Eckington Collieries.

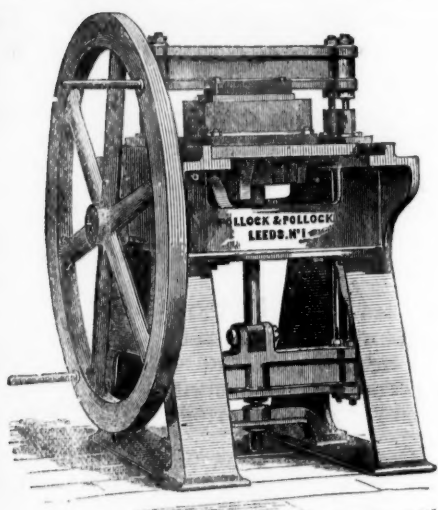
YACE COLLIERIES, near CHIPPING SODBURY,
January 24th, 1877,
Messrs. HAYWARD TYLER and Co.
GENTLEMEN,

In reply to yours of the 15th inst. (which absence prevented my attending to earlier), I am very pleased to add a testimonial to the efficiency of your "Universal" Steam Pump. The one you supplied to us has worked most satisfactorily for the past six months, without giving us the least trouble. It is lifting over 2500 gallons an hour up a perpendicular height of 480 feet—going 30 strokes per minute, with a steam pressure of 30 lbs. per square inch—boiler 340 yards from pump. I can strongly recommend it as the most efficient pump for high lifts ever seen. I shall be very pleased to give information to any of your friends, or take them to view it working.

Yours faithfully,
EDWD. W. B. MONKS, Managing Director.



Sole Makers: HAYWARD TYLER & CO., ENGINEERS, LONDON.



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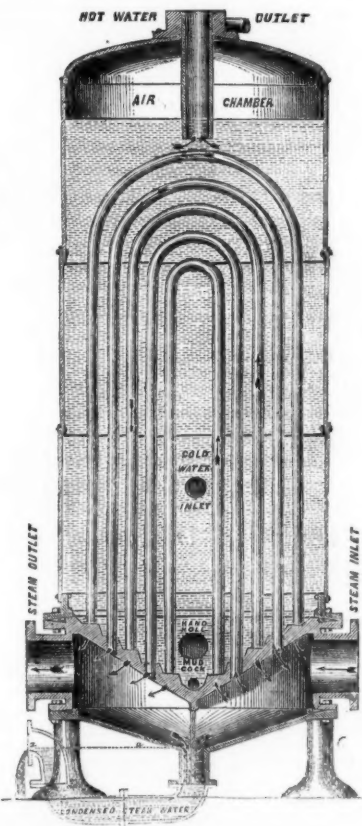
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NEPTUNE FORGE ENGINE
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TIPTON, STAFFORDSHIRE.



Having purchased the Engineering Business lately carried on by R. BERRYMAN AND CO., at 23, Congreve-street, Birmingham, and 28, Wilson-street, Finsbury-square, London, have removed the whole to their Works at TIPTON, to which place ALL COMMUNICATIONS SHOULD IN FUTURE BE ADDRESSED, and where the BERRYMAN HEATER can be seen at work, and in every stage of manufacture.

Being the SOLE MAKERS and PATENTEES of these CELEBRATED COAL SAVERS and EXHAUST STEAM UTILISERS, and having remodelled and greatly improved them, adding largely to their HEATING SURFACE and WATER CAPACITY, J. W. and Co. have put down a special plant, which includes an entire new set of improved patterns, enabling them to offer these FEED WATER HEATERS to the public at

GREATLY REDUCED PRICES.

This arrangement of BRASS TUBES of a great length giving an enormous HEATING SURFACE makes this HEATER not only the MOST POWERFUL ever invented, but its FIRST COST PER FOOT OF HEATING SURFACE IS LESS THAN HALF THAT OF ANY OTHER. It will condense the whole of the Exhaust Steam from the Engine if required, and entirely does away with the NOISE and BACK PRESSURE from exhaust pipes.

ALL THE TUBES ARE OF SPECIALLY PREPARED SOLID DRAWN BRASS AND COPPER; both ends are expanded into the bored holes of the same Tube Plate, METAL TO METAL, and every tube is free to expand and contract independent of each other. Leakage is impossible, as, when the tubes are once fixed, nothing short of cutting out will remove them. No scurf adheres to the tubes because of the difference of expansion between SCURF and BRASS. The inside of the Heater can be washed out by means of the mud cock and hand hole whilst at work.

Only one pump or injector is required, and as the Heater is placed between the pump and the boiler, the water is forced, COLD, into it, and passes out at the top HOT into the boiler direct. Where the WATER WORKS PRESSURE is sufficient no pump or injector is needed.

The water being heated to BOILING POINT UNDER PRESSURE in the Heater, a saving of from 20 per cent. to 25 per cent. in fuel is effected; the disastrous results of grease in boilers are also avoided, the sewage and other loose matter in the water being deposited in the Heater, the acids are liberated there instead of in the boiler.

Every part can be lined with BRASS, COPPER, or LEAD, as may be required in special cases for heating water or any kind of liquor in large quantities for CHEMICAL WORKS, BATHS, WASH-HOUSES, AQUARIA, GREENHOUSES, BREWERIES, WOOL WASHING, DYE WORKS, TANNERIES, &c., &c.; they will also HEAT AIR FOR CUPOLAS AND BLAST FURNACES, and are now at work as INTERHEATERS for compound engines with direct steam from the boiler with a further saving of 15 per cent.

The New Price List, with detail information, is now ready, and will be sent on application, together with an Illustrated Catalogue, with references and testimonials from Firms using TWO HUNDRED AND THIRTY-THREE of these Heaters.

Original Correspondence.

THE LONDON COAL SUPPLY.

SIR,—In lieu of a saving by the proposed system of 7s. per ton, as compared with railway transport of coal from Yorkshire, and 5s. per ton seaborne from the Tyne, Hartlepool, &c., to the Metropolis, the saving purposely understated is in reality 9s. and 6s. 11d. respectively per ton, totally apart from return traffic by regular daily departures to ulterior destinations of Leeds, Manchester, Liverpool, &c., at such reduced rates as to absorb the entire goods traffic of the Great Northern, Midland and London and North-Western in such direction without noticing other systems. A not inconsiderable proportion of such traffic is already seaborne, and daily departures and reduced rates are only wanting to displace it entirely, effecting a still further reduction in the coal traffic.

Clapham, Jan. 29.

W. J. THOMPSON.

MANGANESE-BRONZE FOR PLATING WAR SHIPS.

SIR,—I see by the Journal of Jan. 19 that shot and shell have completely mastered iron-plating, having penetrated 24 inches in thickness; and if the experiment—iron covered with steel—fails also in resisting the penetrating power of shot thrown by the present modern ordnance, without considering the increased velocity expected from the still larger guns of the future, what will be the next metal, or compound, adopted? From the letters published at various times from your numerous correspondents it would appear that Manganese-bronze has not yet been made sufficiently prominent, as it has been shown that wherever hardness and toughness are needed manganese-bronze should be used, and should also supersede iron and steel for plating war ships; and if this new metal is superior for these and the various other purposes to the metal now used, it certainly should be made known, and as far as possible brought into general use, which would give a stimulus to the greatly depressed mining in the Western Counties. If any correspondent could give your numerous readers any favourable information about its being brought into extensive use in a little time, it would be hailed with delight by workers of—

COPPER, MANGANESE, AND TIN.

COMPRESSED AIR—ITS APPLICABILITY FOR PUMPING.

SIR,—I am pleased to see that your correspondent, Mr. J. G. Green, has opened a question in the Journal which I advocated some years ago, and which, but for the depression in mining generally, I believe I should have demonstrated—I mean the adoption of the constant-thrust pumps in mining. No doubt to an established mine this means a very radical change. To a new mine, also, the opportunity of purchasing a second-hand 50-inch cylinder engine for 200l. is to some extent fascinating, and this when erected is a very beautiful machine; it is, however, ponderous, and all its belongings are ponderous, from the house which contains it down to its remotest wind-bore; still, there are many of its admirers who claim for it that it performs its duties to its owners with a strict regard to economy. The question is, is it a "white elephant," dear at any price? I hope to see a practical discussion of the matter in answer to Mr. Green's letter.

Theoretically, the duty of 1 cwt. of coal is to lift 10,000,000 lbs. weight 1 ft. high. The duty of these large pumping engines, taken from your columns, reduced to same standard is about 2,500,000 lbs. weight, or one-fourth only of the duty of the coal expended. A pennyworth of fact, however is worth a bushel of theory, and I am sorry I cannot give the same particulars regarding the constant-thrust pumps. This I can say, that at the Cesena Sulphur Mines in Italy, with which I have something to do, five of these pumps are at work. The managing director when in London selected them, and for over two years they have performed their work with most satisfactory results, notwithstanding that they are subjected to more than usually pernicious influences of sulphurous acid fumes and condensations.

I hear that Blaen Caelen, which has been quietly developed for some time past, is shortly to be brought before the world again. This mine has in the past attracted considerable notice, and there is a good opportunity of making it as well worth seeing for the excellence of its machinery as, from all that is said of it, it is likely to be on its merits as a mine. I hope the proprietors will give Mr. Green's idea consideration.—London, Jan. 30. R. LARCHIN.

GOLD QUARTZ MINING.

SIR,—I am induced by a perusal of the list of mines, published in the Journal, to make the following remarks on gold mines. There are over twenty mines (named in the list) representing an enormous capital, four only of which have paid dividends since 1876; I do not include hydraulic gold workings. In many instances I fear the want of success is to be found in perpetuating an old mistake which ought to have exploded long ago. The first thing usually done after obtaining the mine, and the capital subscribed, is to erect large reduction and other plant for crushing purposes, and to commence crushing, the leading idea being to keep the mill going, as the paper deductions have shown that "by so doing very poor stone will be made to pay," and if the reef or lode should be a large one everything in the shape of quartz is sent to the surface, because it happens to be in the lode, without ascertaining whether gold is contained all through the lode or not. I have no hesitation in saying that thousands of tons of absolutely worthless stone are crushed annually, while by sorting the stone before sending it to surface, in many cases one-fourth the quantity would produce equal golden results, or nearly so. It is well known that gold is not evenly diffused through the whole of the lode, but occurs in small runs or patches, and is mostly found near the smooth wall, which is generally the hanging or superior wall, the footwall being uneven more or less as the lode makes in thickness or narrows in, which frequently occurs, especially in very large lodes. It is a fact (although to those not acquainted with gold mining it may seem incredible) that gold is frequently visible to the miner employed in breaking the ground even when the mill will show a return of only 4 to 5 dwts. to the ton; and it is a simple matter to the miner accustomed to the appearance and nature of the ground to determine that which contains gold and that which does not; the matter does not rest with him, but with the manager, who, because he has a fine crushing plant, is anxious to keep the same fully employed, to do which the quantity of stone must be raised, and quartz which would prove rich is put with that which is really worthless in order to supply a quantity that all may be crushed together, thereby reducing the average value, giving extra trouble, and entailing greater loss in the necessary reduction process, and to increase what is always a nuisance—the tailings accumulation.

The above remarks apply equally to some of the dividend-paying mines, and offers the best argument in favour of the tribute system, a system I am no advocate of in the interests of mineowners, only that it secures that which ought to be obtained by other means—separating the quartz below, leaving the worthless stone in the mine. Tributaries will not be found who will go to the trouble of sending stuff which they pronounce worthless to the crushing mill. The tribute system once adopted, it is difficult to work the mine under any other system, as the men know that tribute pays them best, and when employed under the day-labour system are inclined to make the work go rather awkward in hopes of returning to their favourite system—tribute. A case in point came under my notice—a company which started under favourable auspices after working 12 months, and crushing everything in the shape of lode stuff, found they had been doing so at a heavy loss. The system of tribute was introduced, the tributaries paying all labour expenses in getting and hauling to surface, the company to do all the crushing, &c.; each party received an equal share, the company soon found their banking account improve, but they were not satisfied, as they thought the tributaries were leaving too much stone down the mine, and which ought to be crushed, "as there was sure to be some gold in it." The tributaries declined to have anything to do with getting up what they had refused as worthless, and in consequence gave up their pitch. The

stuff was raised and crushed by the company, and produced for them the handsome return of 10d. per ton. I need not say they decided in favour of the tribute system, to which they returned. The mine has been worked under that system ever since, nearly 16 years, with fair results.

Should the foregoing remarks be the means of calling attention to what I believe to be one of the great existing evils in connection with gold quartz mining, I shall have obtained the objects for which they were penned.—Redhill, Writington, Jan. 30. S. J. MOULTON.

THE SAN JUAN MINES.

SIR,—Seeing in the Journal of Jan. 12 a letter from this district, I would say a few words with regard to it. As to their wondrous wealth none can doubt that, and it is a comparatively new country, having only been out of the Indians' hands for three years. The mines are situated in South-Western Colorado, and extend over a surface of 80 square miles, which is literally covered with veins of quartz, carrying silver and silver-lead ores; and, to give some idea of their number, by referring to the Record Book of Silverton we find that there are more than 3000 of these lodes worked yearly. These do not include those of Ouray, Patrot City, Lake City, and other towns which have grown within the last three years. Now, I do not mean to say that all these veins are good, or that they will all pay for working, as those who are acquainted with mining in any country know how many veins of inferior character are mixed with paying ones. But one thing is certain, that as far as yet tested there are more rich veins in the San Juan district than any other section of the American continent. The mines are in granite formation, and are situated in the heart of the Rocky Mountain range, at an elevation of between 9000 and 14,000 ft.; they are long and continuous veins, some of them showing along the surface for many miles, giving the appearance of longwall, their width on the surface varying from 2 to 100 ft. Many poor miners have made these lodes pay when after extracting the ore they had to pack it on donkeys for 30 miles, and then sell it to the smelters at the rate of \$40 for 100-oz. ore. Now, I do not say much with regard to the mines, as they will prove for themselves; but one thing is certain, as your informant states on Jan. 12, that many rich mines are now idle, and much ore remains unsold on the dumps on account of so little machinery. And in these dull times, when all are looking for sound investment, I think that anyone so disposed could not do better than put up works; and even if 50 such works were erected they would not be equal to supply such a large district. I know not of only one or two mines, but numbers of them which have a vein of silver-lead ore, which carries 50 per cent. of lead and 150 ozs. of silver to the ton, which are 4 ft. wide from the surface. Now, we have all human reason to expect that they will so continue, as the quality of ore has increased as depth has been gained, and 1200 ft. now being the deepest. Having myself been one of the first who entered this district, I would be happy to give information to any gentlemen who may take an interest in the subject, and show them specimens of ore from more than 100 of these mines.

Devonshire-square, Jan. 28.

JOHN M. STUART.

FLAGSTAFF MINE.

SIR,—I see by Mr. Crofts' letter in last week's Journal that there is "an interesting letter from Mr. McBride, detailing the position of affairs in Utah, and that this letter is on its way, and may be expected early in February." Is this Mr. McBride the quasi-attorney of the Flagstaff Company who acted in the transfer of the Hunter contract to Billings, and which permitted the shareholders' interests to be annihilated by the resuscitation of this contract in the name of Billings? It is further stated that, "after all, Mr. McCormick's 'claim' may be resolved into a mere lien on the property for the balance of his debt." What nonsense to talk of Mr. McCormick's "claim"—the claim has long since been a judgment debt, and long after that was sold by the sheriff under an execution levied, and not redeemed; so much so, that on a subsequent occasion when another execution was issued the sheriff returned that the Flagstaff Company had no property, real or personal, in the Territory of Utah. Who knows but what E. Davis and Mr. McCormick are partners? and is it likely that either one of them is going to convert a good title to what the Tarbet suit has left of the Flagstaff Mine into a "lien for a claim"? It strikes me that they manage these things better than this in the United States; and in any case, before the shareholders risk further loss by subscribing towards Mr. McBride's legal theories (which they have but a very sad reminiscence of in the Tarbet suit), they will do well to get some respectable English lawyer to go out and stop there for a month or two, make full enquiries, and report to the shareholders, and if he can obtain an injunction to restrain Mr. McCormick, which has already failed on the application of American lawyers, there may be a faint hope of the shareholders getting some small return at a remote period, and the "bulls" and "bears" in the meantime revel in their usual amusements with these shares, and win golden opinions from learned geological professors.

FACTS AS THEY ARE.

RICHMOND MINE.

SIR,—Several letters having appeared in the Journal on the above mine I must remark that I do not see any unreasonableness in those clamorous shareholders wanting an increased dividend, nor do I think they ought to be charged with not having the interest of the company in view. To only ask for one-third of the quarter's profit to be divided is very reasonable. With regard to "Eye-Opener," I refer him to a leading article in last week's Journal, and also to Prof. King's report as to the durability of the mine. There may be a little disturbance in the lode, but a stroke of the pick may any day reveal to sight greater riches than ever.

Jan. 29.

AN OLD SHAREHOLDER.

RICHMOND MINING COMPANY.

SIR,—And now comes another light upon the dividend subject, disguised under the latinity of "Lucem," in the Supplement to last week's Journal. So dissatisfied with "Forethought's" arithmetic is this new light that he has undertaken to furnish accounts without accurate data to show the wisdom of this company distributing dividends which are not yet available in cash. In the Journal you quote from the Eureka Sentinel that pig-lead is "being offered in New York at $\frac{1}{2}$ cents per pound, with no transactions at that price; that this stagnancy makes quite a difference in the Eureka district, which produces 75 tons daily, and at present price it does not pay to send crude bullion to the refineries; the Richmond Company are accumulating a large stock of refined lead, and look to a foreign market for sale." Does "Lucem" think that the company have the assumed profit which he talks of in cash? He is very free with his arithmetic, which I do not think your readers will consider so far superior to "Forethought's." Perhaps he can turn his light on to the cost of refining in the desert, and the price which lead is valued at in the weekly returns. I, for one, shall be glad to hear again from "Forethought," whose prudent observations are I believe appreciated by all well-wishers to American enterprise, who are not dazzled by the shine of these weekly returns, which have sent the shares up to so high a price, in spite of an adverse legal decision, which the best lawyers in the United States have expressed an opinion will not be reversed on appeal. There are other "niggers on the wood-pile" which "Lucem" has not turned his lantern on to, but which, perhaps, induces "Forethought" to counsel prudence in respect to, and the declaration of large dividends. Firstly, do the reserves of ore in the mine, and its condition generally, warrant the enormous rate of production at the mine? Secondly, does the present depressed state of the market warrant it, as it is contrary to all practice in prudently managed British mines? Lastly, but not least, what provision does "Lucem's" arithmetical mind propose to make for the claim which the Eureka Company have for ore taken out of their ground to the extent of millions of dollars? When the shares go down this question will crop up, and then buyers on weekly reports will say, "Oh, dear, what swindles these Yankee mines are!" Let the directors exercise common business judgment, and get all the cash they can together, and stick to it till these questions are settled and markets better, and in the meantime pay 6 per cent. in-

terest per annum on their capital. This would ensure the future prosperity of the mine, and serve the best interests of bona fide shareholders, though I must confess it might be to speculators for a rise.—

AN EYEOPENER.

NEW QUEBRADA COPPER MINING COMPANY.

SIR,—I observe that there are nearly 400 tons of this company's copper ore for sale at next Ticketing at Swansea. These mines are capable of shipping on an average twice this quantity monthly as a minimum, and then not be within 200 or 300 tons of what the Richmond Mine turns out in a week of ore containing precious metals. Should this ore average only 15 per cent., and it is thought it will go over 25 per cent., then with an average standard of (say) 96l. and produce 15 per cent., it gives a total minimum earning of 111,840l., and allowing 61,840l. for expenses of working, &c., there is left 50,000l. per annum at minimum price and produce, equal to over 15 per cent. upon the par price of these shares, which are now quoted 2 to 24, or earning at this price over 30 per cent.

COPPER MINER.

MUNDICS.

SIR,—In the present state of tin mines—the greater number being unable to meet costs, which, under the ordinary price of tin, could make profits—is it not worth enquiring if most of our western mines could not utilise an article generally associated with tin deposits which is now neglected, but which is capable of giving substantial returns? I refer to mundic or iron pyrites. In the majority of tin mines it is dressed with the tin and allowed to waste, but the experience of the Wheal Mary Hutchings Mine, which resolved to erect their own calcining works, is such as shows that there is a mine of wealth independently of tin, from mundic alone, which was never before utilised. Cannot this example be followed with advantage by western mines who are slow to invent, but not to follow a successful innovation?—Truro, Jan. 29.

COUSIN JACK.

THE BLENDE TRADE.

SIR,—In reply to "A. B. C.'s" letter, in last week's Journal, will he be good enough to address a letter for me to your care, under the initials "X. Y. Z.," giving full particulars, and if possible sending samples.—Jan. 30. X. Y. Z.

LEAD MINING IN THE NORTH OF SCOTLAND.

SIR,—As no doubt any information respecting the lead lode near Largsmouth, on the Moray Firth, North Briton, will be interesting to many of your readers, I send you the following short account:—An attempt was made to develop this lode about 80 years ago, and was repeated in the year 1852, but it was reserved to the energy and perseverance of a gentleman connected with lead mining in the Isle of Man to thoroughly establish its position and value. There are two powerful lodes which form a junction at a point about half a mile west of Largsmouth—one running nearly north-east and south-west, and the other east and west. They are united for some distance east of the junction, and then again separate, the more northerly passing out to sea, and the other being found in the recently constructed harbour works. They are similar in character, being both composed of highly crystallised quartz and spar, and containing lead ore. The main lode has a general bearing north 50° east, a distinct wall and underlay to the north 12 in. per yard. A shaft has been commenced and sunk 45 ft. a little to the south of the junction; it is fitted with engine, pump, &c. The ore has been proved in paying quantities 77 fms. east and 230 fms. west of the shaft. At the junction to the north of the shaft the lode measures 179 ft. across. The northern portion crops up out of the sand in a rock, which is visible when the tide is out. This rock is 100 ft. long in the direction of the lode, 27 ft. across, and contains 15 ft. wide of first-class ore. Along the south wall there is a course of ore about 3 ft. wide, and valued at 3 to 4 tons per fathom; the fact of a portion of the lode being under water at high tide may seem a drawback, but as it only crosses the bay, running inland at each side, there can never be any weight of water on it, and the course of ore along the south wall is always dry. There are excellent facilities for shipping ore, as a tramway can easily be laid to the harbour, the ground being level and the distance only 700 yards.

C. E.

LEAD MINING IN KESWICK DISTRICT, CUMBERLAND.

SIR,—As stated in my paper, published in the Journal of Dec. 20, that mining industry was for centuries most prosperously carried on in this district, and would ere long burst forth from the slumber which has of late rested upon it, this fact is borne out by the formation of a spirited company, with ample capital at their command, to rework with vigour the Barrow Mine. The movement of this enterprise was first made by some mine agents of the immediate neighbourhood, amongst whom may be noticed Mr. W. Porter, manager of the Gatehill Mines, and Mr. Postlethwaite, of Keswick. It must be highly encouraging to those gentlemen to know they have the good feelings and well wishes of the mining fraternity. Although they have struggled hard, and their exertions have been most indefatigable, they have the satisfaction to know that their labours are much appreciated, and that capitalists are coming to the front. The company will be styled the Co-operative Mining Company—a name, however, which I do not much care for in mining matters. The property is situated near the Vale of Newlands, to the west side of the beautiful Lake Derwentwater, and on the Cockermouth and Penrith Railway. The nearness of the mine to the line is of great importance to the undertaking. The property will, in all probability, be better known by its former name—the Barrow Mine—than that now given to it. The sett is situated in the same mineral field as Goldscope, Brandlow, Yewthwaite, and many other mines of renowned wealth. The Barrow grant comprises several veins; the principal ones are of great width, and may be seen for long distances traversing the Valley of Newlands before it strikes and enters into the mountain called Barrow—hence the former name of the mine. It is on the opposite side of the mountain from Newlands, where the lodes in this mine have been extensively wrought. Be it known that in the Vale of Newlands one of these lodes, known as the Yewthwaite vein, has been most extensively operated on, and vast quantities of ore (galena) have been got and sold. The bunches of ore here were found close together—only short detached pieces of barren rock were found between these runs of ore, or, as they are sometimes called, pipes of ore. The ore ground was sufficiently rich to enable the fortunate owners to open the mine 250 fms. in length and to a considerable depth. A very steady dividend-paying mine for a long period.

The Barrow Mine, like most others in this district, dates back to remote ages; at all events, previous to the invention of gunpowder, which is borne out by the fact that most of the levels (cross-cuts) have been driven or cut out with chisels, &c. Nothing has been done in shaft sinking in this mine, probably owing to the mountains altitude, which afforded every facility for taking up a series of levels from the top of the hill to its base, and is equal to a deep mine in a flat or level country. The surface outcrop of the lodes were easily traced on the mountain sides, thus giving ample opportunity as to where the levels should be taken up. The operators availed themselves of this advantage, and several levels were projected with most beneficial results—indeed, splendid profits were made. The veins for the length and depth of the mine presented much the same feature throughout, being large, composed of friable quartz, baryta, gossan, galena, and cerussite, or lead spar, in composition with needle spar, flos-ferri (aragonite), Cao, Co. 2. The veins in this mine are not so common to large deposits of lead ore as was Goldscope and Brandlow Mines. The ore in the Barrow veins was found to exist with greater regularity; being leaders of ore in large lodes, as many as eight or ten of these strings may be met with at a time. These leaders more or less unite with each other or intersect. It is at these points where the greater quantity of ore is found, and not unusual to have a vein of solid ore $\frac{1}{2}$ yard to 2 ft. wide; the length of such a pipe is invariably 10 to 15 fathoms. These are really splendid lodes, and may be worked at a small cost owing to the soft nature of the veins. A few men will make a proportionately large

output. Nowhere in the kingdom are such promises of wealth lying at the adit level as in this neighbourhood. The yield of ore from the principal vein cannot be less than 2 tons per fathom on an average, and the Barrow Mine has largely contributed to supply the furnaces of this district with ore. The commercial value of the mine stood at a high premium upwards of half-a-century, and constant and regular dividends were paid. My hearty good wishes go with the enterprising company now about to rework this mine; I wish them the same success as was the lot of those who formerly held the property. If this result be obtained the proprietary will be good enough for any contented soul.

P.S.—I am informed that Glenderaterra, another property in this mining field, is about to be worked by a powerful proprietary. This mine, I fancy, will prove the prize of 1878. I hope to treat on the sett in another paper.

THE COST-BOOK SYSTEM, AND LIMITED LIABILITY.

SIR,—It is with lively interest that we read the highly instructive letter of Mr. M. F. Dormer, published in your last week's Supplement. It is pertinent to the subject, and the writer has evidently practical views in respect to "working funds" in contrast with "vendors' consideration" in capitalising companies for mining purposes. The first object in co-operation—i.e., joint-stock enterprise—is to collect "working capital," and thus possess the sinews and strength to develop, mature, foster, and render profitable mining adventures which individual efforts could not accomplish. It is not every venture in mining that succeeds, nor is it every "sniff" of ore displayed at surface or in shallow scratching which lead to untold wealth in depth. The best system for mining purposes is unquestionably the "Cost-book," practically carried out, and in that case the shareholders are called together quarterly, and the accounts examined and audited by the collective members present at the meetings. The profits or loss, as the case may be, is divided among the fraternity—hence a dividend or call is then made to square the "Book," and a fresh start pursued. The report submitted gives the state of the workings, and the public deal in the shares in conformity with the prospective prospects of the adventure foreshadowed by the executive, or, if questioned, their own agents. It is evident to all practicals that in estimating the value of mines the past expenditure counts for nothing—the present is realised, and that the future alone constitutes the inherent worth at which shares should be bought or sold.

I can remember the time when the chief grievance in mining works was the tax of landlords' dues, and this had frequently to be abated, or wholly for a time abandoned, in order to encourage the adventurers to prosecute the workings, while, during the progress of early development, shares very rarely advanced to a premium, and not unfrequently fell to a lamentable discount. This was the case with Treavean, East Crofty, South Frances, Seton, and hundreds of other mines, which subsequently became distinguished for their products and gains. The first referred to fell to a shilling a share, and then, on 32d. 10s. paid, advanced to 27000l., and actually declared dividends exceeding 40000l. each. East Crofty was all but abandoned, yet the shares, on cutting a rich lode in the 43 fm. level cross-cut, advanced to 10000l. a share. South Frances were actually unsaleable, and shares were relinquished rather than respond to calls, still the mine subsequently paid over 300,000l. in dividends, on a gross capital of about 10,000l. Seton was equally varied in its career to success—shares were relinquished, at times unsaleable, yet the extension of a cross-cut intersected a good lode, and the price rapidly advanced to 8000l. and 9000l. each. Such was the character and progress of mining adventure in the palmy days of the most recent of "past" ages of legitimate mining.

Now mining adventure in vogue is weighted with 100, 200, 500, and in cases up to 700, and even 800 and 1020 per cent. on the working capital subscribed and fully called up. How can mining adventures more than house and shipbuilding, manufacture, trading, railway, constructive enterprise, mercantile, or commercial co-operative associations prosper under such crippling imposts? The results are utter failures, and who can express surprise at the collapse of metallic mining in the face of such deterring obstacles? We are yet far off the "solaties" in the degeneracy of wide-spread fashionable "circular and pamphlet," or limited liability mining monstrosities? These companies are misnomers when classed with honourable *bona fide* mining adventures—they are simply schemes of financial cabals, and not unfrequently a paper currency of 20,000l., 30,000l., 50,000l., and 100,000l. of so-called paid-up shares is created, upon which not a single pound sterling has been subscribed. We were creditably informed a few days ago that an energetic promoter of one of these gigantic financial confrieries actually expended 10000l. in circulars and advertisements since the "omega" of 1877, in order to foist his share of the booty upon the public; but, thanks to the indifference of the awakening intelligence of the investing public, the "draw" was a blank. It is to be hoped that the "cure" is infused in the "infection," and that the incubus in the shape of a leviathan financier will expire from inanition, to the advantage of honourable enterprise in the legitimate fields of mineral industry and wealth.

It is very evident that Leadhills, Tankerville, and Roman Gravel were and are valuable properties, and though the promoters are open to the charge of being sanguine they must be wholly exonerated from censure or blame in estimating their properties at their own value, yet all discerning and practical experts must question their "optimism." The working capitals of these companies are respectively 15,000l., 8000l., and 8000l., yet they were capitalised at 120,000l., 90,000l., and 72,000l. Hence they were weighted with 1020, 800, and 700 per cent. vendors' consideration. As mines these three companies have declared dividends—Leadhills of 80 per cent., and Roman Gravel 5 1/2 per cent. last year, and Tankerville nil. In the aggregate Leadhills for the first year (1877) since its registration 12,000l. on 15,000l. working capital; Roman Gravel, 81,900l. on 8000l. (seven years); and Tankerville (six years 1876), 58,200l. on 8000l. As mines these may honestly be called prizes, yet as weighted Leadhills has repaid only 12,000l. on 120,000l.—say 15000l. on the working capital, and 10,500l. to the promoters or vendors on their 105,000l. consideration money; Roman Gravel has paid to the vendors 72,800l., and the working capital 91000l.; and Tankerville, 50,925l. and 7275l. respectively. The shares in these three companies are fully paid up, and should Roman Gravel and Tankerville, which have ceased to pay dividends, require to raise additional working capital it must be done either by preference shares or debentures, both of which are simply mortgages. Hence we deplore the restrictive working of the Limited Liability Acts in their application to the ever occurring necessities of metallic mining adventure; and, therefore, approve of the Cost-Book System, which in fact is unlimited liability still under the immediate control and administration of the shareholders themselves. The executives are the servants of the proprietaries, and no debts can accumulate or losses arise unless sanctioned and endorsed by the quarterly meetings, so long as the shareholders are true to their own interests, and look after their own business.

Many abuses have crept into existence under the malpractices of the Cost-book System, yet, although objectionable, they are not of a gross and overwhelming character—they constitute the exception, and not the rule. The remedy is in the hands of mine shareholders themselves, and with ordinary diligence, intelligence, and supervision the working of the cost-book administration embodies the true elements and facilities essential to the preservation of an equitable co-partnership.

What is required to revive and protect mining is the creation of a court of administration in London to supersede and take the place of the Stannaries of Devon and Cornwall. There is no reason whatever why the mining interests of those two counties should be protected by a separate court more than those of North and South Wales, the North of England, the Midland Counties, and Scotland. One sound and good Judge would administer the laws in respect to all the disputes and rights of mines and miners throughout the whole of Great Britain, and with such a court, and an independent judge to expound and enforce the observance of sound legislative laws, the Cost-book System is the very acme of all principles now in use. We should thus secure independent local management, freedom from merchant influence, and equitable redress against existing and future grievances.

To show your readers, Mr. Editor, that the Limited Liability Acts are too facile and expansive for metallic mining we subjoin the capital—vendors', promoters', and working—capitalised for the purchase and working of 19 very ordinary mines, many of which have again and again been abandoned as worthless, some have not even sold ores, while three only have declared dividends, and those out of working capital. The amount of vendors' and promoters' shares is something truly astonishing.

Aberdaunant	£ 40,000	New Fowey Consols	£ 48,000
Ashton	60,000	Van Consols	50,000
Penstruthal	101,000	West Milwr	50,000
Dylliffe	60,000	West Tankerville	38,000
Great West Van	50,000	Ballycummisk	100,000
Llanrwst	60,000	Caldbeck Fells	60,000
Llanidloes	42,000	Glyn	20,000
East Van	90,000	Gold, Merionethshire	100,000
Llanfihadr	50,000		
Talybont	30,000		
Tolgus Consols	50,000		
		Total	£1,097,000

Five per cent. interest is equal to 54,850l. annually. From whence, and oh where! and when will the dividends spring up?

Pray who can unroll the social problem of melting close on eleven hundred thousand pounds of capitalised shares into Her Majesty's coin? Have the vendors and promoters given due weight to the axiom of economic science, sufficiency of working capital available for the payment of wages, machinery, and materials to develop the various lodes, and to bring the 20 mines not only into self-supporting but likewise a remunerative condition?

R. TREDINNICK,

Consulting and Advising Engineer.

Exchange, 36, Coleman-street, London, Jan. 30.

THE MINERAL RESOURCES OF IRELAND.

SIR,—I had much pleasure in perusing Capt. Tonkin's letter in last week's Journal, and I am certain that you and many of your readers will sympathise with the object of his communications. I have had no little experience in various parts of the country during the last 24 years, and can bear him out in his statement that Ireland is a splendid field for mining enterprise, and far surpasses many of the foreign regions selected by the British capitalist. I have been much struck by the large Glandore mineralised range or champion lode which he describes; and the more I study its various features the more impressed I become that it is scarcely possible to find a better and more legitimate field for speculation. That large quantities of iron and manganese abound there can be no doubt, and being found cupriferously impregnated throughout I am more and more convinced too that these bodies will be found to give way in depth to large ranges of copper ore.

This mineralised channel appears to be the great attractive agency of the section of strata through which it passes for miles in length and width, the strata being as it were cleaned, and very analogous to many sections of ground enclosing rich metalliferous lodes elsewhere. On the eastern shore of Glandore Bay the outcrop of this body is more than 200 feet wide, and at Roscarberry, some four miles east, it is there found cropping out strongly, and of more than ordinary width for champion lodes.

This champion course as now seen shows many features in common with and analogous to the Great Lanzi Copper Mine, near Campiglia, Tuscany, which has been wrought for many centuries with evident great commercial success, whilst great and unbroken lengths yet remain in Lanzi and adjacent lands, and is engaging the attention of English capitalists; and should it so happen that the Glandore be found equally cupriferous it would indeed prove a great prize, and which would be greatly enhanced by its almost unparalleled advantageous surroundings in every respect for economical and efficient mining.—*Liverpool, Jan. 29.* MARTIN BOUNDY.

MINING AND COUNTERMINING IN CORNWALL.

SIR,—The circulars addressed by Mr. W. H. Rule to the shareholders of West Seton are, we think, scarcely likely to do mining in Cornwall any real benefit; on the contrary, they may possibly disgust men of large capital and broad views, and drive them away from Cornish mining as a speculation. It would be commonplace to compare this fine old mine to a sinking ship, and the shareholders to a mutinous, "sea lawyer-like" crew, but yet the comparison would hold good. Capt. Josiah Thomas, the late manager of West Seton, is well known and respected as one of the best mining authorities in the county, whose life has been one long and careful training among the most experienced and successful miners of the age. He has been much sought after as a mining inspector, and again and again shareholders of losing concerns have begged him to take charge of their interests. The consequence of this is that Dolcoath, employing about 1200 hands, Cook's Kitchen, West Frances, and South Crofty claim a share of his attention. That he has been able to conduct any of these with success, seeing his hands are so full, says much for his energy. The secret of his success has been in the appointment of thoroughly reliable agents, devoted to him, who act in his position, and arrange the various details in the mines, and in a consistent support of the merchant shareholders.

We would not disparage Mr. Rule, who, as a plucky adventurer, has done no small amount of good, but still knowing him as we have for at least eight years, and meeting him almost daily for a portion of that time, we are bound to say we never discovered in him any warrant for his arrogating to himself the dictatorial position he has assumed at West Seton. Those who have read the reports of meetings in the Camborne district for the past two years cannot help being struck by the frequent appearance of Mr. Rule's name as antagonistic to Capt. Thomas. At one time it is a question of finance, at another of the sale of tin in the best market, and again the purchase of material and stores. Mr. Rule advocates selling tin in open market, buying stores wherever they can be got cheapest, and a clear balance-sheet. He strenuously opposes keeping matters in the dark, in plain words he poses on all possible occasions as the champion of liberty. With a boldness hitherto never known in Cornwall he attacks old-rooted customs and maxims that date as far back as the Cost-Book System; he sticks at nothing, and these rotten practices now totter on the verge of an abyss which Mr. Rule has dug for their grave. People have speculated as to who this energetic radical's backer is, until they almost believe the motive-power is in the machine itself.

So much for the stand Mr. Rule has taken—how has Capt. Thomas appeared? From conviction, habit, or interest—or possibly owing to a rational combination of the three—he has always shown himself a steadfast and consistent supporter of the ancient traditions of his forerunners and forefathers; he has regularly sold his 1200 tons of black tin annually to his employers; he has loyally (and regardless of Mr. Rule or his remonstrances) purchased his materials, coals, timber, machinery, candles, &c., from the merchant adventurers, and they are content; they can afford to give ten to twelve months' credit, or even two years in times of extraordinary pressure; they do not complain of the management. The home shareholders consist mainly of smelters, merchants, shopkeepers, jobbers, or "unfortunates," who have pinched their fingers, and cannot withdraw; and whilst the merchants "hold on," and make their profits, the jobbers can always turn an honest penny, those outside this charmed circle suffer. We are no admirer of Mr. Rule, certainly no partizan of his, but, with him, we hold that a mine, like any other company of partners, is worked for the interests of the adventurers as a body, that individual interests should be unknown, and that any system which compels the paid agent of any company (i.e., of the shareholders as a whole) to purchase his goods in any but the cheapest and best market should never be tolerated. Too many honest men have paid the penalty of independence in Cornwall already, and if Mr. Rule succeeds in breaking the ring, monopoly, or clique he will deserve a monumental record of his exploit as high as that on Carn Brea.

If our mine managers are men of business let them import their own coal, let them beat down prices insisted on by their shareholders, and call tenders for the main articles of consumption. We could enumerate many who have fed, fattened, and risen to affluence through the system, which, however, does not render it consistent with thoroughly legitimate mining.

When Cornish mining flings away the fetters of despotism, when

her responsible men acquire a spirit of independence, it cannot fail to prosper. Capt. Thomas has done his best for West Seton, and has retired to make way for men whom the adventurers think more capable. Probably he does not regret the events which made his retirement necessary; he must see the need of concentrating his energy. Times are against him, and the riches of Cook's Kitchen, West Frances, and South Crofty are yet to be discovered, while in the meantime reserves are disappearing and debt is accumulating. Deeper and deeper operations are being carried on, and the cost is increasing at no small ratio every 10 fathoms. Every three months makes matters worse, and, to make them more gloomy, nobody knows how the accounts stand. Captain Thomas has one chance of making himself as famous in the annals of Cornish mining as his father is—by throwing off the yoke, charging all costs close up, buying in the cheapest market, paying cash monthly, even if the banking account has to be overdrawn, when advances up to two-thirds the value of the machinery, &c., have been made making fresh calls. What a storm of opposition these measures would provoke in Dolcoath, for instance, and yet this is what Cornish mining must come to. This course will soon become absolutely necessary to prove that the majority of Cornish mines are not mere bubbles inflated by long-winded promoters, but valuable realities. Any mine that can hold on through a time of depression must be valuable, and those that succumb only leave a better field open to those healthier in prospect.—*Jan. 29.* SIGMA.

HINGSTON DOWN CONSOLS.

SIR,—Taking the figures issued by Mr. Laws during the past year we find the following result:—Agency, including management, purserhip, clerkship, and underground agency combined, 16l. 16s. per month; expenses connected with the London office, including secretary, directors, auditors, &c., 14l. 5s. 6d. per month. We are unable to add to the above the expenses of the London directors during their recent excursion into Devonshire, and their visit to the mine to formally dismiss the manager and the engineer, and to reduce the earnings of the men to a strikingly economical degree. These expenses will probably appear in some future account.

Jan. 30.

THE LOCAL SHAREHOLDERS.

NORTH LAXEY, AND ITS MANAGEMENT.

SIR,—The numerous letters which have appeared in the Journal of late is my apology for trespassing on the space of your columns, especially the one bearing the signature of the Secretary, whose spirit of vindictiveness seems to be not exhausted, although at the meeting he did his utmost to damage the reputation of an old and tried representative of the company in the endeavour to obtain a change in the local management.

Mr. Murchison represented at the meeting that the company during a period not far short of a generation had been organised and reorganised half-a-dozen times, on each occasion raising fresh capital, resulting finally in the expenditure of about 150,000l., inclusive of the ore raised and sold during that time; and he seeks to prejudice the reputation of Capt. Rowe in the estimation of the shareholders by holding him responsible for this large expenditure, because the results have so far proved disappointing to all concerned. Well might Capt. Rowe exclaim, "Save me from my friends." But, according to the secretary's own showing, the directors, shareholders, local manager, and his own self have all been rowing in the same boat during these number of years, but all of a sudden a breeze springs up on the coast of the Isle of Man, and a few of the mutinous crew resolve among themselves to throw the captain overboard. But, Sir, to be more serious; it is strikingly manifest that the local management must not only have possessed the entire confidence of the directors but also the shareholders from the fact, which cannot under any circumstances be refuted, that the management and expenditure from year to year have been sanctioned and approved by resolutions declared over and over again, thereby absolving Capt. Rowe from any blame whatsoever so far as regards expenditure, unless it be shown that the capital has been wrongfully and improperly expended, which even the secretary has not the courage to insinuate, but the very contrary has been proved by Capt. Plummer's report, whose services were enlisted by the directors themselves, who has clearly and unmistakably asserted that the working of the mine has, in his opinion, been carried out in the most satisfactory and able manner possible and with due economy, and that the machinery and plant both underground and at surface is all that can be desired; and here again, to show the animus of the secretary, because Capt. Plummer's report confirmed in every possible way the work carried out by Capt. Rowe, he presumes to throw cold water upon the report by insinuating that—"Mr. Plummer was only at the mine a few hours, chiefly occupied in examining the workings underground, and he has not attempted to go into the accounts and see what various things have cost, even if this were now practicable. Nor can Mr. Plummer now compare Capt. Rowe's reports from time to time over many years past with the actual appearances of the lode at different points on each occasion." Surely Mr. Murchison cannot be serious in giving expression to such nonsensical remarks as these, when he must know, and if he does not he ought to know from the experience he has had in mining affairs, that it would be utterly impossible for Capt. Plummer or any other mining expert to obtain such information as he has unwisely alluded to; and when he raises the question of the cost of materials he reflects upon his own management as secretary, whose duty it should be to take every possible precaution against excessive charges for materials, and it is to be presumed that before the pay has been remitted that the cost-sheets have been duly checked and approved in the London office.

In reference to Capt. Plummer's report dwelling upon the admirable condition of the machinery, plant, buildings, &c., as he found them, the secretary remarks—"As Capt. Rowe has had an immense amount of capital at his disposal, besides the proceeds of the sales of ore, it would, indeed, be surprising if there were not something to show for the money." There is a very old and true saying that "Discretion is the better part of valour," but I must confess that in this particular instance the directors and their secretary would have exercised more discretion had they refrained from making this most unjust attack upon their local manager, and had remained silent, inasmuch as no distinct charge has been made against the management for want of capacity or judgment in the working of the mine, but, on the contrary, it has been proved beyond doubt that everything has been done for the best, and, although disappointing, it is most unfair and unjust to attach any blame to Capt. Rowe because he has not been skilful enough to put ore into the mine. If blame is attributable to anyone (and I do not imply that there is), but as the directors have chosen to fix the responsibility upon Capt. Rowe for the expenditure of the capital, a more unjust charge can scarcely be conceived. If the shareholders in their wisdom entrust the directors from time to time with their capital the least that can be expected of them for their paid services is to take due care that it has been properly and economically made use of, and, therefore, the directors themselves are the parties who should be held responsible for the moneys entrusted to their keeping; and I have yet to learn from experience that directors, of a mine especially, are of any earthly use whatever unless it be to take due care that its finances are duly and properly dispensed.

I, therefore, felt, and still feel, that it was a mean and contemptible act on the part of the directors to shirk their own responsibility, and shift it upon the shoulders of their local manager, and by such miserable means to induce the shareholders to make a change in the management. It was under these circumstances that I took a prominent part at the meeting in moving an amendment to the resolution of the directors, which had the effect of the latter being withdrawn, and the matter left in the hands of the directors, who possess the power by the Articles of Association to make any change in the management which they may consider beneficial.

I should have preferred to correct the inaccurate remarks of the secretary as to the proceedings of the meeting, but space will not permit me to do so, beyond stating that there were only 23 shareholders present out of nearly 400. Of these the secretary observes that, "The great bulk of the meeting did not vote at all" (thanks to my amendment), 5 having voted in its favour and only 1 in sup-

port of the directors' resolution; and then he makes the extraordinary assertion that of the absent shareholders (nearly 400) "He believes at least the same proportion of those absent from the late meeting hold the same views on this question as the large majority of those who were present,"—a presumption utterly at variance with the facts.

Lloyd's, Royal Exchange, Jan. 28.

HOME INDUSTRIES—NATIONAL WEALTH—No. III.

SIR.—Diamonds, diamonds! We have hinted in a former paper that diamonds are among the articles of luxury procured by the rich, and also as being of commercial value and a source of gain to countries where produced. Luxuries are not necessities, but the one we wish to mention is now to the great population of this country a necessary—the black diamond we mean. The fire in the grate cheering the room this cold night, the gas by which we are writing, is coal. We do not forget that the victuals we have to-day eaten has been cooked by coal; even our coat and shirt were manufactured by its aid. Locomotion, too, means coal, either by sea or land. In the utensils we use from day to day there is coal to be seen. Coal everywhere from city to village, as well as from palace to cottage. We do not mean to deify coal, and if we did we think we should not be idolaters, for we should constantly burn our idol. What, then, is this essential something—is it a mineral? Was it a vegetable? These questions have been answered, we think, and if any doubt remains as to how it was produced, there is none as to its existence and value. That value has been well known to the fortunate landholder who, beneath the surface of his domain, possesses it, and the amount of wealth to such landholders which it has already produced as well as the prospective value, it is impossible to estimate. Nor has the benefit to landowners been singular. The lessees of properties producing it have also been generally greatly benefited, some exceptions being certainly admitted. Labour, the first to be named, is one of immense magnitude. The miner who descends into the pit, and crouched on his side, hews from the narrow seam, exposed to exploding gas or the more fatal choke-damp, has found employment which has for many years afforded him a larger amount of wages than ordinary workmen, and we think deservedly so, and we hope the time may be far distant when these miners will not be properly remunerated for their hazardous toil; and we hope also that the time is not far distant when they may learn that coercion is ultimately of little service, and that masters and men should be agreed. This may happen when they cease to listen to advice of delegates and agitators, whose only punishment we would wish should be that in consolidated essence they may have brought on them the misery they inflict upon their dupes.

After severe struggles and suffering it is possible that there may yet be a truce to the wretched war of Labour v. Capital. After the miner the shopkeeper and merchant are benefited, there being an impossible separation between the prosperity or otherwise of each. Railways, too, partake largely of the advantages which the production of this article creates, the bulk being so considerable that its conveyance adds very materially to their dividends, notwithstanding the great number of men necessarily employed as porters, &c. Freightage by sea also enters largely into the employment of our ships and sailors. Had Britain alone possessed this product we might indeed have been wealthy. From Germany, Russia, America, and doubtless as well as India, China, and Japan, from which countries in future time we may probably receive large supplies for markets which in time past have been supplied by English produce. It is noteworthy here that the populations of these countries are dense, and labour very cheap, we may, therefore, be easy as to a lengthened scarcity of this article. The panic of a few years ago is not likely ever to be repeated, and consequently the reaction now existing. It has been estimated that 3,000,000 sterling was raised by companies in opening new coal fields in 1872-3 (we cannot say if this calculation is right), we know moreover that properties were purchased at fabulous prices, weighted with heavy promotions, managed in many cases by extravagant directors who knew nothing of their business, and also that speculation in coal mines has in the aggregate been a great loss to shareholders during the last few years. The tide is, however, still flowing on; coal is needed—nay, must be had—and although we are passing through a time of great depression, yet there is a bright edge to the cloud. The revival of trade will affect the black diamond about the first, and this home industry may yet lead to much national wealth.

Finsbury Chambers, Jan. 29.

PUBLIC COMPANIES IN THE FUTURE.

SIR.—In pursuance of this subject, ventilated in the *Mining Journal* of last week, I fear that it is too much to expect that the simple indication of an evil is sufficient to effect its cure. Customs die hard, and it is necessary to return again and again to the attack, and with redoubled force. But in these days no system that is not based on a solid foundation of reason can long stand, and this is the encouragement which is held out to persevere in the course. Our attention was confined in your last Journal to the manner in which public companies have been manipulated for the benefit of those who have brought them forward, and the evils consequent upon exacting such large sums from undertakings which would be heavily weighted enough if they had to bear only their own burden of primary cost, without the tremendous premiums that have been piled upon them, as if from sheer determination that they should never be remunerative. But there is another side to the question, or rather other parties besides promoters who pocket large sums and fatten on public credulity; if not, what is the meaning of that gigantic system of puffing, which is so common with a certain class of the community, who would try to persuade the unwary, like the alchemists of the last and previous centuries, that they had discovered the philosopher's stone which would convert everything that it touches into gold. How much damage has been done to legitimate mining and other companies by this inordinate puffing is not for me to say, but that it has been sufficient to give to many a nausea of every kind of joint-stock enterprise is known to all.

Now, in the coming revival of business it will be just as necessary to put our own house in order, and to see that we are not the impediment to a full return of really prosperous times, as it is to point out the weakness in our neighbour's arrangements. It should be observed here that it does not by any means follow that every laudation of a company must be placed in the category of puff. It is almost impossible to say too much in reason of some properties, either as regards their intrinsic worth or their management, while with others to say the least thing in favour of them would be to lay oneself open to the charge, and would be positive falsehood. If there is any good to be said about a company let us say it, and give our reasons for doing so. It is not that there are not many good and profitable mining and other companies in existence that there is a necessity to palm off the greatest rubbish as the most likely future prize, but because there is the greatest profit made from the latter method. Another thing must be borne in mind if we are to have anything like healthy business in the future; and, perhaps, it is quite as important as the last matter pointed out—I refer to the heavy premiums which have been fostered on shares simply through dealers contending with each other in augmenting prices, totally regardless of merits, and "landing" the unfortunate public, who unhappily become the victims of these manipulations.

During the late great collapse the public did not suffer more, if indeed so much, from the capitalised premiums, for which promoters are responsible, as from the extraneous ones, the chief odium of which must fall upon shareholders. If these remarks have the effect of arousing the conscience of the sharedealing community, and removing the blot from their escutcheon, the purpose will have been answered, and myself amply rewarded.

There are still several matters bearing on the subject under consideration which it is most important should be discussed. Some are so full of interest that it would not be right to introduce them at the fag end of a letter, such, for instance, as the working of the Limited Liability Act, which your correspondent, Mr. R. Tredinnick, initiated in last week's Journal. Anything that your correspondent

says on the subject is entitled to every respect, but I cannot agree with the view that he takes, and will, with your permission, give a few reasons in my next why I differ from him.

79, Cornhill, Jan. 31.

M. F. DORMER.

ROOKHOPE MINING COMPANY.

SIR.—In the last number of the Journal there appears a letter signed "Robert Byron," in which he says that I lately contradicted his "assertion that a promise had been held out, and believed in, that 80 tons of ore would most certainly be sampled in November." I beg again to contradict such a positive assertion as far as I and the directors are concerned, and even the extracts given by Mr. Byron confirm me in doing so. In their report the directors state that "attention is being given to the dressing machinery for the purpose of rendering it more efficient for treating a larger quantity of stuff, and it is hoped that in a short time the returns will be at least doubled." With regard to the hoped for increase in the returns, the directors were led to express themselves as they did from the statements made to them by the manager when they visited the mine in August last. In the fourth paragraph of their report the directors give Mr. Blenkiron's estimates of the ore ground opened, and the prospect of improvement in the 42 fm. level.

But in one of the quotations given by Mr. Byron, the Chairman explained fully the grounds upon which the board anticipated the increase in the returns. The Chairman stated:—

"We are about to engage the services of a gentleman believed to be of high attainments as surface manager and superintendent of the dressing floors. He is a young man who is desirous of pushing his way, and at an interview we had with him he afforded us complete satisfaction. He is used to works of a very much larger and more modern character, but he has stated that with the addition of some sieves and grates, and a better division or sorting of the orestuff, all of which will not cost more than 100l., he will be able with the present machinery to dress in November next about 80 tons per month. (Hear, hear.) And the agent has said that if he can dress 80 tons he can keep him supplied with that quantity: 80 tons a month would yield upon our present limited capital a return of 30 per cent.—a result which I am sure will be gratifying to all concerned. (Hear, hear.) The alterations and improvements that he mentioned are ordered to be made, and will be on the spot very shortly, so that we are very sanguine of a great improvement in the dressing and quantity of ore treated taking place almost immediately."

Now, so far from the directors making any "promise" that the returns would "most certainly" be increased to 80 tons in November, the Chairman clearly showed that it was conditional on the expectations of the new dressing agent and of the manager being fulfilled.

I may here remark that the manager has in the last two years been much dissatisfied with the several dressing agents he had selected himself, and the one (an Englishman) appointed by the directors in October last was recommended to them as having "during the last four years been engaged in erecting and working the newest German dressing machinery, which is nearly all self-acting, or as near so as a man can get it."

As to Mr. Byron's remark that "suspicions are entertained by many that these extravagant representations have been made for a purpose," &c., I shall content myself by saying that there is not a particle of truth in it. I presume the shareholders expect to get from the directors all important information about the mine and its prospects which they may possess, and what would have been said had they concealed the above expectations of their agents from a general meeting? Every effort is being made to place the dressing machinery in the most efficient state at the earliest date.

8, Austin Friars, Jan. 30.

J. H. MURCHISON, Sec.

ROOKHOPE LEAD MINING COMPANY.

SIR.—If your correspondent "Observer" had made enquiries at the office instead of addressing anonymous letters to you he would have saved making a fool of himself, and would not have proved how reckless he was in making false statements. Now, I have personally looked into all the matters he refers to, and may say that there is not a word of truth in the whole letter of your correspondent.—1. The agent of the Derwent Mines made a report chiefly as to the dressing operations for the guidance of the directors. It was not suppressed, but was given on the understanding that it was not to be published, and I believe any shareholder can see it. It does not reflect seriously on the management.—2. There was no ore dresser at the late meeting who declared his ability to turn out 80 tons per month of dressed ore with the existing machinery; therefore, no such person was dismissed, and no foreigner was engaged to fill his place.—3. The directors did not sanction the erection of costly machinery or any other in the dressing department which cannot be made of use for the mine.—4. The managing agent had appointed several dressers who disappointed him, and who by his own account were failures, while he himself admitted that though he could work the mine properly and bring the ore to surface, he knew nothing of dressing machinery. Consequently the directors appointed a person to superintend the dressing, who they had reason to believe was fully competent.—5. The shares did not rise to 27s. 6d., and consequently could not fall from that price, and if they have gone down a few shillings, they are not unlike other similar concerns lately.—6. It is not a fact that strong protests (nor any) have been received from the North against the management of the mine.

AN ORIGINAL SHAREHOLDER.

ROOKHOPE LEAD MINE.

SIR.—I am glad that attention is now being directed to the management of this mine. The promises made at the last general meeting, which Mr. Byron inserted in his letter, were very provoking to those who read them in the light of the fact that there was no sound reason why everyone of them should not have been fulfilled. I see in last week's Journal another report of this mine, which makes the third for the month. Surely the wheel has commenced another revolution; but the shareholders in the North are not deceived. The directors may feel assured that their proceedings and reports will now be narrowly watched. For several reasons the best thing they can now do is to put one or two gentlemen in the North of known integrity and competency on the directorate. The mine is undoubtedly a gem, and only wants proper management to turn out a splendid prize.

OBSERVER.

DERSBY MOUNTAIN MINE.

SIR.—In August last I paid a visit to this important and highly promising property, and afterwards drew attention to its merits in the pages of the Journal. Last week I paid a second visit to the mine, and my first impressions have been greatly strengthened with regard to its immense value and capabilities for yielding large and permanent profits. The great Gorse lode (which was accidentally discovered in November last) is now one of the wonders of the neighbourhood, and I question whether another such lode can be found in Wales, with the exception, perhaps, of the Van, to which, I may remark in passing, it is in many respects similar. In No. 4 adit level it is fully 33 ft. wide, with lead throughout, and I, as were the practical men who accompanied me, was astonished at the extent of the workings. Large masses of ore of more than a ton in weight are being taken out, and it is estimated (and the estimate seems to be a fair one) that at least 500 tons are already broken, awaiting the crusher. When I mention that this quantity has all been taken from one level since Nov. 16 it will, I think, be the best evidence which can be adduced of the productive nature of this great lode.

The No. 5, or deeper level, is being cleared to go under the ore ground, and from the appearance of the last workings I have a strong impression it will there be found richer, as the lode appears to be more solid in depth. The fact that this great Gorse lode is richer in No. 5 than at the bottom of No. 4 suggests the belief that the old miners, having no sufficient dressing appliances, probably worked away only such solid parts of the lode as they could dress by hand, which may account for so much of this magnificent lode being left standing, and which is, as I have mentioned, of considerable extent.

As many as 100 men could be easily and profitably employed in driving and stopping, and when the crusher (which is expected to be finished in about six weeks) is in full working order very large returns may be expected from this portion of the workings.

Irrespective of the results to be obtained from this fine lode, I may mention that there are the Hafna group of lodes within a few

fathoms, on which little work has been done up to the present time. These Hafna lodes will ultimately be commanded by the No. 5 or deep adit level at a considerable depth from the surface; and when all the lodes are developed and in full work I can see nothing to prevent this mine becoming one of the most profitable in Wales. Certainly the prospects of the mine at the present time are far beyond the representations which have been made from time to time regarding its value. As an additional favourable feature, and one which will be appreciated by practical miners, it may be mentioned that as the mountain is high and dry the mine can be worked without the aid of steam power.

Gracechurch Buildings, City, Jan. 31.

C. B. PARRY.

LEAD MINING IN THE HIGH PEAK OF DERBYSHIRE.

SIR.—Nothing has appeared in the Journal respecting the new operations going on in this district since Oct. 30, when, as then reported, the shaft was down in shale and bind 130 ft. Early in November the limestone formation was reached at a depth of 22½ fms; this was found in thin layers again and again with bind between, and at 24 fms. the permanent solid limestone came in. At the end of December a steam pump was fixed in the shaft, with a garland and cistern; all the water was picked up and driven to surface at the rate of about 600 gallons per hour; the pump is capable of 5000 gallons per hour a depth of 300 ft.—say, 50 fms.—so that this difficulty is settled. The further sinking of 30 fms. of shaft, 12 ft. and 8 ft., in solid limestone was then let on contract to the eminent firm of contract sinkers and tunnelers—Messrs. Kenrick, Williams, and Co., of Westminster, and of the Merthyr and Dowlais Tunnel, South Wales—and their foreman, Mr. Philip Tomkins, took the work in hand on Jan. 15, and quickly broke the fast hard crust which, as a rule, overlies the mountain line in this county, and is now making satisfactory progress. It is expected this firm will speedily bring air compressor, two Ingersoll drills, with needful appliances, dynamite, and electric battery, and sink these 30 fms. in a short time; it is anticipated that at 15 fms. in the solid lime the great north vein will intersect the shaft, and four other veins further south, where it is intended to let to these gentlemen the driving of a cross-cut from shaft southward and cross all these veins, and a second cross-cut at 25 fms. down the lime to cross the same veins; then make choice of the best and most suitable vein, and drive a forefield or heading 100 or 150 yards east, also 100 to 150 yards west, and virtually open the mine in a few months. And as this sett is from two to three miles in length, in virgin veins overlapped with shale, the finest mineral property of 1878 is expected to be opened out. Much interest attends this new undertaking, and it is thought that these contractors, who have such extensive experience in tunnel work and shaft sinking, will with these Ingersoll drills surprise the old native miners by the rapidity with which the work will be carried out, and, in fact, revolutionise the art of mining altogether. You shall have further reports as the work proceeds, and when the vein is reached, samples.

A VOICE FROM THE HIGH PEAK.

WEST CHIVERTON MINE.

SIR.—I noticed in last week's *Mining Journal* a letter signed W. F. Richardson—who "W. F. R." is I know not, and do not expect he knows me, except by name; his insinuations, therefore, concerning myself are most unwarrantable and unjust. He, undoubtedly, measures my principles by his own very narrow mind. "W. F. R." makes a mistake when he says I am Mr. Gould Sharp, and Mr. Granville Sharp's "own mining captain." I am certainly intimately acquainted with the latter gentleman, and not unknown to the former. I have the honour of being connected with Mr. Granville Sharp in the management of two mines of which he is the secretary, but this connection would not for one moment deter me (neither should it any other man) from giving an honest opinion of any mine I might be called on to inspect. As regards Llanrwst Mine, Mr. Sharp has never asked me to inspect it. I have no desire to; in fact, would prefer not going near it; but if I did so, I am certain Mr. S. would not publish my report for any improper purposes. Allow me to tell "W. F. R." that for the future he had better mind his own business; but if he will persist in bolstering up any party or mine, there is no occasion for him to do so at the expense of others outside their "wretched squabble," and I trust he will not again have the insolence to cast aspersions on my character.—*Truro, Jan. 31.*

RICHARD SOUTHEY.

LLANRWST MINE.

SIR.—I had intended taking no notice of any further correspondence referring to this mine, but, as I stated in my last, "let facts speak for themselves;" since, however, Mr. W. F. Richardson has thought proper to cast, in my opinion, a most unwarrantable reflection upon the integrity of (to use his own words) "my own mining captain," Capt. Southey, I cannot allow such to pass entirely unnoticed, having known, and been connected with, Capt. Southey in mining for many years, and the longer my experience of his fearless integrity, his quick perception, and ability as a practical mining engineer, and the indefatigable way in which he fulfils his duties to his employers, the more I appreciate the connection with him. It has been my good fortune to accompany Capt. Southey on several occasions of his inspection of mines, not only in Cornwall but also in Wales, and I must acknowledge I have taken his advice on not a few occasions I should have been spared the loss of many hundreds of pounds. Such being a fact, coupled with what he has achieved for the shareholders of the West Chiverton Mine, after he had been told that the mine was unbottomed, surely there could be no honest objection to my suggesting that a man of such proved practical ability as a mining engineer as Capt. Richard Southey should inspect Llanrwst Mine. With all due deference to Mr. W. F. Richardson's question—"I put it to any shareholder whether a fair and impartial report would be expected under such circumstances?"—I guarantee, and I challenge Mr. Richardson to refute my assertion, that Capt. Southey would give none other than a faithful report of any mine that he inspected. It is the first and only time that "my own mining captain's" integrity has, to my knowledge, been disparaged. I shall, therefore, feel obliged if you will allow this letter to appear in next Saturday's Journal.

Gresham Buildings, Jan. 29.

GRANVILLE SHARP.

P.S.—As Mr. Richardson is under another erroneous impression, I wish to put him in the right by informing him that I have made no application for an order for either myself or my agent to inspect the Llanrwst Mine, neither have I stated that I have done so. As regards his publishing a report of the mine, written more than 12 months ago, I made no other comment than I leave it to others to form their own opinion, and put what construction they may think proper upon the motive.

G. S.

LLANRWST LEAD MINE.

SIR.—In last week's Journal I notice a letter from Mr. W. F. Richardson relative to Llanrwst Lead Mine, from which it would appear that he wishes to represent the present state, merits, and value of the mine from what was stated in a report written from an inspection made of it 14 or 15 months ago. Probably in the annals of mining never was there conceived an idea more mistaken or delusive; it is, however, to be hoped that mining speculators will be too cautious, notwithstanding the republication of the report 15 months old, to be allured, even the most credulous, into the parting with their money on data so uncertain and insecure. Had the writer any personal knowledge whatever of mines or of mining I presume that he would neither have written such a letter, nor have requested you to publish it. Be it known—as every experienced miner does know—that although a mine may have been inspected, not even seven months ago instead of fourteen months, and that by the most experienced and approved of mining engineers, and its then state truthfully and faithfully reported, yet the case may now be totally different.

During the time that has elapsed since Nov. 16, 1876, a mine of ordinary magnitude—and particularly a lead mine—might have become valuelessly poor; or, on the other hand, one of the richest ever known. There are others who are most strenuously recommending the purchase of Llanrwst and other shares who know no

more of mining, or of the value of what they recommend, than the writer of the letter in question. For aught they know the mines may contain incalculable riches, or may not be worth a penny.

Jan. 30.

G. G.

MINING IN NORTH DEVON—THE SOUTH MOLTON CONSOLS MINE.

SIR,—From your well-known courteousness and desire to publish any information respecting the progress of mining adventure wherever situated, I feel sure you will not think me intrusive or presumptuous in again addressing you upon the progress of the South Molton Mine. The rise and winze alluded to in my last have been communicated, and the men are now working upon the fine lode thus laid open. In the 12 fm. level the lode will yield more than 3 tons of lead per fathom. The ore is very solid, and one may, without wishing to indulge in a pun, describe it as indeed *molten* lead. There is every prospect of the first sampling taking place in about a fortnight, and when it is considered that it will be less than two months since the mine was drained I think such a result has seldom, if ever, been equalled. The lode runs north and south, and the ore appears to incline, or "dip" as it is called, west. The 22 fm. level was only driven 5 fms. east by the former workers. The present parties are driving west, at which point the lode is already producing good lead, and when the rich run of ore of the 12 is met with I am strongly of opinion that this hitherto almost unknown mining district will attract considerable attention.

South Molton, Jan. 24.

DEVON.

GREAT CARADON MINING COMPANY.

SIR,—A letter appeared in the Supplement to last week's Journal, signed "A Miner," in which he confesses to be amused at what he terms Mr. Sharp's novel project of making a doubtful meeting legal. He then takes up the scourge, and condemns the shareholders for passing a resolution to wind-up voluntarily, and closes his interesting effusion by advising the shareholders to go to the Stannary Court. I am a shareholder or adventurer in this mine, and attended the meeting referred to; and from the statement made by the Secretary there was no alternative but to re-hold this particular meeting. The facts were simple. It was necessary to sue a shareholder for arrears amounting to a large sum; various objections were made by him, and amongst them the meeting of Dec. 30, 1874, which he alleges was presided over by only one shareholder. The case went from one Court to another, and each time it was decided in the company's favour until it reached the High Court of Appeal, where the decision was that the meeting in question was void. In point of fact, therefore, no meeting had been held, but this could not alter the debit balance against the mine, or exonerate any of its members from liability; hence the meeting held on Jan. 11. With reference to winding-up the affairs of the mine, I am in a position to state this was contemplated some time back, and the mine stopped accordingly. I have been through the accounts, and find that the major part of the work necessary for a liquidation has been accomplished, so that the liquidator's task will be comparatively short. In conclusion, your correspondent, by his title of "A Miner," at once makes himself a "son of toil," and is, perhaps, too evasively modest to allow his name to appear. Assuming this to be the fact, in future he cannot do better than observe the old maxim—*Ne sutor ultra crepidam*.

Gresham Buildings, London, Jan. 30.

E. J. DREW.

THE SOUTH MOLTON CONSOLS MINE.

SIR,—Although not a mining man, I am interested in the prosperity of this district, and having heard, from various sources, accounts of the great quantity of lead discovered at the above mine, I, in company with three friends, visited it on Thursday last, and we were highly gratified with all we saw. The mine is near the high road, and within 150 yards of the Devon and Somerset line, where I am told they are going to have a siding. Of the few mines I have seen, I must confess I was never at one exhibiting such outward and visible signs of success—everything seemed in good working order; and, although (as we were informed) some two months had been lost in consequence of the contractor having sent a defective engine, which was continually breaking down, we saw many tons of lead ore, all ready for market, and large rocks, several of them considerably over 1 cwt. each, almost pure, being hauled up from underground. With the permission of Captain James, we descended, by means of strong iron-runged ladders, to what is called the 12 fm. level, and here we saw, what well repaid our visit, a solid branch of lead quite 18 in. wide running along under our feet. My little experience in mines has shown me the ore more or less mixed with a predominance of earthy matter, but this seemed as pure as if it had been melted and run in. The Captain informed us that such a vein is but seldom seen so clean, and it certainly realised in my mind a more tangible idea of the earth's riches than I had ever experienced before. From this place we descended to the lower or the 22 fm. level, where the men were boring up to enable them to dig away the large masses of mineral we saw glistening all around. It was a pretty sight, and in these dull times it did our hearts good to see such indications of immense wealth in our midst. All honour and thanks to the gentlemen who are bringing such results about, for depend upon it where there are such grand deposits of ore as we saw at the South Molton Mine there must be more in the neighbourhood, and the success of this undertaking will, I trust, be the means of drawing attention to this beautiful district.

W. WARREN.

[For remainder of Original Correspondence, see to-day's Journal.]

PETROLEUM.—Last year the value of petroleum imported was 1,772,230*l.*, against 1,424,196*l.* in the previous year.

WHEAL MARY HUTCHINGS.—There is, probably, no mine in the two counties whose prospects have suffered more by the continual fall in tin than this mine, and yet none which have experienced the paradoxical fact have actually benefited in the main by circumstances which at first threatened to be overwhelming. With tin at its usual price the mine was capable of being worked with a fair profit, while it had an immense extent of tin ground opening up in the lower levels and stopes, by which the mine would have given extra dividends, while at the same time the plant and machinery were being added to out of sales, so that the mine was undoubtedly one of those that could, to all appearances, be safely referred to as being on the direct road to a sound, well established dividend position. The fall in the price of tin altered all this; and, as was the case with scores of others, not only were profits suspended, but it was only by the exercise of the most rigid economy and the judicious suspension of all unprofitable points that costs could be met. Being thus thrown, as it were, more dependent on realising to the fullest extent the resources of the mine where they could be profitably worked, attention was directed to the fact that there existed throughout the mine, extending from the surface backs to the lowest levels, an immense quantity of arsenical mudic (pyrites), which it was suggested by Capt. Miners (the manager) could be worked at considerable profit by the erection of calcining works on the spot, and at the last annual meeting of the shareholders it was decided that the necessary works should be at once erected. In pursuance of the resolution the work was energetically commenced and vigorously carried to completion, and calcining is already being prosecuted with such results as show that good profits will be returned from these hitherto neglected pyrites deposits. It is estimated that the returns will be 40 tons per week, worth about 4*l.* per ton, while the expenses of raising and calcining, with interest on the outlay for the erection of the works, is not more than 1*l.* per ton. It is clear, therefore, that the prospects of Wheal Mary Hutchings have been benefited rather than damaged by the terrible depression of the metal trade. The tin department is in itself looking well, only the richer points being worked, which are giving a profit; and, looking at the resumption in value the mine would assume on the restoration of the tin trade to its former position, and to the fact of profits being capable from the pyrites alone, it cannot be denied that Wheal Mary Hutchings stands as con-

spicuous in western mining for its cheering prospects as it does for the important fact of its being the only dividend tin mine at present in Devon.

Meetings of Public Companies.

DON PEDRO MINING COMPANY.

A half-yearly meeting of shareholders was held at the offices of the company, London Wall, on Wednesday.

Mr. S. LLOYD FOSTER in the chair.

Mr. JOHN E. DAWSON (managing director) read the notice calling the meeting.

The CHAIRMAN having apologised for the absence of one of his colleagues, through illness, went on to say that he had very few remarks himself to make upon the present occasion. He should presently call upon the managing director to make some remarks, and to read a statement which he (the Chairman) had looked carefully through, and which he could vouch for was absolutely and quite correct. Mr. Gordon, formerly manager of the St. John del Rey, was present, and would kindly answer any question which any shareholder might wish to ask with regard to the mine, as Mr. Gordon had visited it on several occasions when in the district. He regretted he did not feel sufficiently well to make a speech himself. He might mention that this was a half-yearly meeting, called in compliance with the wish of Mr. Hill and some other shareholders, who thought it advisable that half-yearly meetings should be held, but no report nor accounts were submitted.

Mr. JOHN E. DAWSON, managing director, said: The principal question which will come before the shareholders to-day is that of finance. Since the shareholders authorised the completion of the permanent pumping machinery our hopes of finishing the work without a call have risen and fallen according to the varying nature of the advances regarding the produce. The expenditure of the past few months has made a considerable inroad into our cash balance, but we think that, after providing for all liabilities to the end of the year, we shall have a surplus of something like 4000*l.*, as compared with 8000*l.* at the end of 1876. The directors have repeatedly urged upon Capt. Vivian the necessity of working as economically as possible, and they believe he has done his utmost in that direction, consistent with the requirements of the company. The increase of cost is partly owing to provisions having risen to nearly famine prices, in consequence of a deficient harvest last year. The prospects for the coming harvest are favourable, the young plants being reported as looking well. Included in the cost is the outlay on the permanent pumping machinery, which from January to November amounted to 3900*l.*, also outlay for new haulage arrangements—661*l.*—and viaduct and tramway from entrance of mine to reduction works—369*l.*; these items together amount to 4930*l.*, and about equal the amount by which (according to the monthly estimates) the expenditure has exceeded the produce. Thus—Cost to November, 25,698*l.*; produce, 45,545 cits. at 5*s.* 6*d.*, 20,583*l.*; apparent loss, 4915*l.* We may, therefore, consider the apparent loss to have been covered by the capital outlay just referred to, and when it is borne in mind that the cost includes the expenditure on various other labour-saving improvements, it will be seen that the gold-raising operations have been really carried on at a profit. With respect to the completion of the permanent pumping machinery, Captain Vivian estimated to complete it in six months, but it has been twelve months in hand. This delay is very disappointing to the directors, but they are quite convinced that Capt. Vivian has done all that it was possible to do under the circumstances in which he has been placed. The directors cannot attempt to offer so full and satisfactory an explanation of the delay as, doubtless, Capt. Vivian would be able to do, but from the various circumstances which have tended to hinder the work, and which have been reported to the shareholders from time to time in the monthly slips, the directors think it only just to Capt. Vivian to remind the shareholders of the following facts:—First, there was an exceptionally wet season at the time of commencing the machinery, which caused great delay in getting timber of suitable size; secondly, various labour-saving improvements and new haulage arrangements have had to be introduced, which for the time necessarily absorbed some of the force which would otherwise have been allotted to the permanent pumping machinery. The chief labour-saving improvements were referred to in the directors' last annual report, and the new haulage arrangements, consequent upon the collapse of the upper portion of the shaft, have been detailed in the monthly slips. Many hindrances to the mechanical part of the work, such as the smith's work, had been caused by the frequent breakages of the present machinery, and it is the smith's work of the permanent pumping machinery which appears to be most behind. As you all know from the telegram published in the last slip, the work is so far advanced that Capt. Vivian has been able to set the 60-ft. wheel, going to try the machinery, adjust balance, &c. In a letter since received, Dec. 24, Capt. Vivian writes as follows:—"As regards the working of the wheel, bobs, rods, &c., attached, nothing could be more satisfactory. The wheel was started at 6 o'clock P.M., and named 'Foster.' It was, I can assure you, a grand sight to see this monster wheel in motion; it went off without the slightest interruption, and it was not found necessary, I am glad to state, to make a single alteration, as every part of the machinery worked so smoothly that to know it was moving it would be necessary to see it, as one cannot hear it, notwithstanding being near, therefore the friction is little." As far as the directors can understand Capt. Vivian's letters, there now only remains the pitwork to be fixed to enable the wheel to commence lifting water. How long this will occupy the directors cannot state. They wrote asking Capt. Vivian to give an idea as nearly as he could when the machinery would be completed, but seeing that no definite information has been received the directors cannot, at present, say anything more. As regards the new haulage arrangements, which have unavoidably affected his first estimate as to time, he does not like to commit himself to another estimate, notwithstanding that the work is so far advanced, it being impossible to foresee what hindrances may arise from day to day. That he is doing all he possibly can to expedite the work the directors are fully convinced, and he expresses great satisfaction at the progress now being made. For instance, on November 18 he writes—"I am pleased to state that a very large amount of labour has been performed during the last three months, and which is very much to the credit of the English staff in general, and especially to the captain, who has shown great zeal." 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made, and with the other assets distributed among the whole of the shareholders in equal proportions. As this distribution would give a mere trifle on each share it became a question whether it was not better to expend it in costeaning for some of the other lodes known to pass through the sett, so as to ascertain whether there was really anything valuable in the property.

Mr. J. Y. WATSON suggested it might even be desirable to drive up the adit level. Mr. J. Y. WATSON said that in the event of winding up they would be making a call on the partly paid shares to give to the fully paid shareholders, and as one of the largest shareholders, having about equal numbers of each share, he would prefer that the amount should be expended in the further trial. They had 169. 11s. 7d. at the bank, and 104. arrears of call, which, with the amount remaining to call, would give them about 1373. total assets, and he certainly thought it would be better to expend this upon looking for one of the other lodes, which might be found at a shallow depth. They had a letter that morning from Capt. Powning, stating that he went over the mine with Captain Waters, who said that, judging from the dialling in Roman Gravel at the 65, the Roman Gravel lode in their sett would be to the west of Shelve village, whilst the cross-cut was not quite up to the village, although it was originally Capt. Waters' opinion that it was on the side they were working.

The CHAIRMAN remarked that the telegram received that morning from Capt. Waters confirmed his report, so that if further trial were made they should, he thought, have entirely fresh management.

Mr. LATREILLE said that as he was holder of fully paid shares only he would have something to receive if the concern were wound up, yet from the fact of there being still a prospect of their finding one or other of the remaining lodes valuable, and as the amount which he would have to receive per share would be very trifling, he would certainly recommend that the amount be expended on the further prosecution of the mine.

Mr. WATSON said that the property was, unquestionably, well situated, and he believed that the engine which went to Tankerville was originally intended by Messrs. Jones and the old adventurers for this place. He would certainly like to see it tried further.

Upon the proposition of Mr. A. LATREILLE, seconded by Mr. HUTTON POTTS, it was unanimously resolved—"That the thanks of the shareholders are due to the directors for having called this meeting, and after hearing the explanations afforded by them they are of opinion that further explorations of the company's property should be made, and that if necessary a further opinion should be obtained as to the best mode of developing the known lodes, or any other lodes in the sett, and acting accordingly as they may think best."

The secretary was requested to write Capt. Powning at once, and inform him the result of the meeting, telling him at the same time that he could continue to look after the mine and machinery for the present at 5l. 5s. per month.

Upon the proposition of Mr. FERGUSON, seconded by Mr. HUTTON POTTS, thanks were voted to the Chairman, and the meeting separated.

CWM DWYFOR MINING COMPANY.

An extraordinary general meeting of shareholders was held on Tuesday at the offices of the company, St. Clement's House, Clement's-lane.

Mr. J. R. TURNBULL in the chair.

The CHAIRMAN having declared the meeting duly constituted the SECRETARY (Mr. G. J. Gray) read the notice convening the meeting.

The CHAIRMAN in addressing the meeting said he was sorry to have to say the undertaking was in a very critical position. The shareholders would remember that the company had taken over the property on the basis of a nominal capital of 20,000l., in 20,000 shares of 1l. each. Of this 10,005 shares had been subscribed for—8237 shares by the shareholders of the old company on the terms of the agreement for the transfer of the property, and 1768 shares by the public, which produced together 5886l. 10s. Capt. Jewell, the agent, who was present, would be able to state the plan of working since the mine was re-started in April last, and also explain how it was that the expectations of meeting in the 20 with the run of rich ore ground which they had passed over in the 10 fm. level had been disappointed; they would see he felt sure that the circumstances were such as could not be foreseen by the directors, and for himself and the other members of the board he could say they still believed in the mine, and still thought that there was, notwithstanding the present failure, a large body of mineral in the ground, but the capital being exhausted it rested with the shareholders to decide the future of the undertaking. He then explained how the capital had been laid out, and stated that though there were several points in the mine deserving of trial they were not in a position to prosecute the working. There was one fact deserving of mention—that of all the practical mining men who had visited and inspected the Cwm Dwyfor Mine not one had given an adverse opinion, and they all declared they believed there was a mine to be found there in depth. He said it would be for the shareholders to decide if the undertaking was to continue how the capital should be raised—whether by preference shares or otherwise, and in conclusion asked the shareholders to question Capt. Jewell and elicit information and explanations from him.

The SECRETARY then read the following report by Capt. Jewell, dated 28th inst.: Jan. 28.—In reporting to you on the present position and prospects of these mines I cannot but express my great regret that the favourable expectations which the appearance of the mine warranted when I made my report on Sept. 13, 1875, have not been realised. The cause of our non-success is mainly due to the fact that the slate rock met with in Stewart's shaft instead of being productive of lead has disordered the lode, which, although still alive with mineral (copper, sulphur, blende, and lead ore), is not rich enough to pay for working. Nearly the whole of the ground from which I estimated we should get the returns of ore named in my report is still standing in the mine, but as we found the ground disturbed I have thought it better to leave it alone, in order that we might push on the 20 so as to get in more settled strata. We have driven the 20 fm. level 12 fms. 4ft. 6in. west from the bottom of Stewart's shaft on No. 4 lode south, which is at the present time about 15 in. wide, but poor for mineral. We have sunk the winze I recommended from the 10 on the No. 4 south lode, and communicated the same with the 20. The lode in sinking this winze was found to be worth 10 cwt. to 12 cwt. per fathom down to within 2 or 3 fms. of the bottom, where the ground is in a very disturbed state. We have at the present time a stope on the western side of this winze (about 4 fms. from the bottom of the 10 fathom level) which yields about 10 cwt. of lead ore per fathom, and this lead ground will probably be met with in 4 fms. further driving the 20 west. We have a stope over the back of the 10, on the cauter branch west of Stewart's shaft, which yields about 10 cwt. of lead ore per fathom. We have also a stope over the back of the 20, east of Stewart's shaft, yielding about 10 cwt. of lead ore per fathom. We have just re-started the No. 3 level, at the 10, driving west of the south cross-cut on the No. 3 lode south; set to two men, at 12l. per fathom. The lode is split into two parts, and we are driving on the north part, which is about 2 ft. wide, of a promising character, composed of sulphur, copper, and spots of lead and blende.

From the experience gained by our operations since the mine was re-started I fear the eastern ground is too much disordered, and too close to the Cwm Dwyfor slate vein, to yield much mineral, but going west there is no slate, the rock being quartzite, covered with a thick layer of shale. The mountain in that direction rises rapidly, thereby affording 1500 ft. of back; by pushing on No. 3 level west this ground will be proved. The present appearances in this direction are favourable, and I should very much like to see this level continued; the cost of driving it will be from 12l. to 14l. per fathom, and we shall have I should say from 20 to 25 fathoms to drive to get to the body of the mountain. I may say that the lodes of our lower mine are parallel with the lodes in the Symde Dylluan and Drwy-Coed Mines, where in the 80 the lodes yield 6 tons of copper ore per fathom. There is another course open in order to prove the mine—to complete the driving of the deep adit. This deep adit level is driven about 32 fathoms north in slate rock, and will have to be driven about 180 fms. further in order to come under the present workings; this would fully prove the mine to a depth of 60 fathoms. We have just dressed and sampled a small parcel of lead ore, and we have a considerable quantity of slimes and of rough second-class leadstuff, which, however, we cannot dress without further machinery.—JOSEPH JEWELL.

Capt. JEWELL stated that his opinion of the ground was still the same, but that he could not foresee that the slate-rock was coming in to disorder the ground and throw the lode west. The lead ground, of which he spoke in his report of September, 1875, was still standing, and in his opinion the squeeze in the cauter branch was only temporary. He thought it possible that the No. 4 lode south might in a few fathoms further driving the 20 fathom level become productive. With regard to the western ground, he believed the mine was in that direction, and that the lodes rose with the mountain, and that if it was decided to drive the level on the No. 3 lode west a good lode would be found there. The lode as at present seen contained copper, sulphur, blende, &c.

The CHAIRMAN: Do these copper lodes ever assume a large size?—Captain JEWELL: Yes; in the adjoining mines, in the 80, they yield 5 to 6 tons per fathom, and it must be recollected that our copper is much richer than the average of Cornish copper mines, and would work up to 15 or 20 per cent.

A SHAREHOLDER asked how long it would be before the two branches of No. 3 lode driving west would unite, and what the cost would be of continuing that level till they unite?—Capt. JEWELL replied that he expected the two branches would come together in about 5 fms. driving, and the cost would be about 60l., and said the Cwm Dwyfor lodes are parallel with those of the celebrated Drwy-Coed and Symde Dylluan Mines, the former of which had been working for a great number of years.

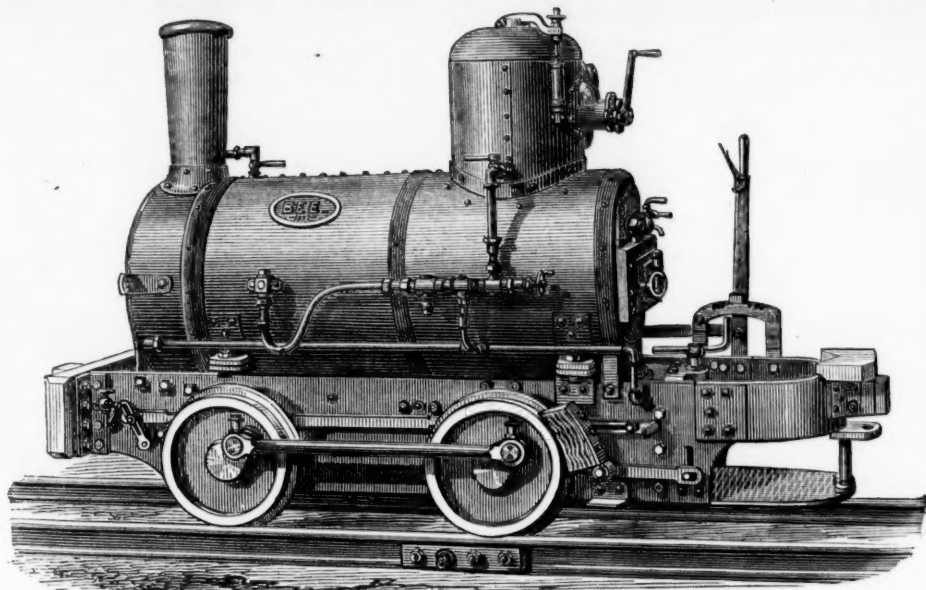
Some further questions were then asked Capt. Jewell, and two recent letters from a mining captain well acquainted with the district expressing confidence in the Cwm Dwyfor Mine were read. A discussion ensued as to the best mode of raising the money required, after which it was moved by Mr. H. CORDEY, seconded by Mr. F. C. HILL, that 2000 of the 9995 unallotted shares be issued as preference shares, bearing interest at the rate of 12½ per cent. per annum, with a *pro rata* participation in the profits after the ordinary shareholders have received 12½ per cent., and that such shares be offered to the present shareholders up to Feb. 10 next, after which they be offered to the public.

The CHAIRMAN having put the resolution, it was carried unanimously, and several shareholders agreed to subscribe for their proportion of the proposed issue of shares. The general feeling of the meeting seemed to be in favour of extending the deep adit level, by which the mine will be fully proved to a depth of 40 or 50 fms. below the present workings; the total length this deep adit will require to be driven is about 180 fms., at a cost of about 10l. per fathom. The meeting then separated.

[For remainder of Meetings, see to-day's Journal.]

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SMALL LOCOMOTIVE ENGINES FOR MINES.

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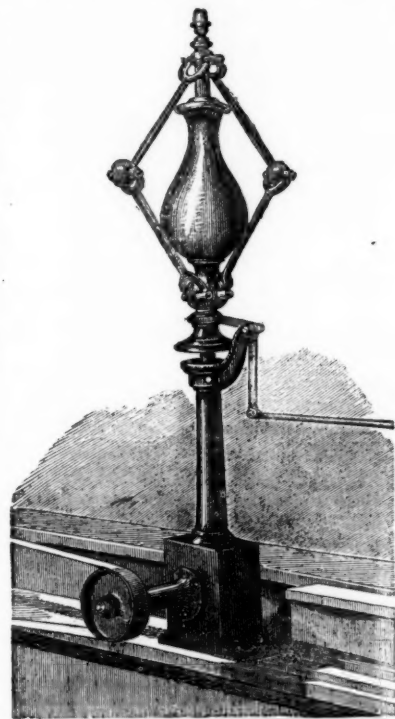
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Larger sizes made with two cylinders.

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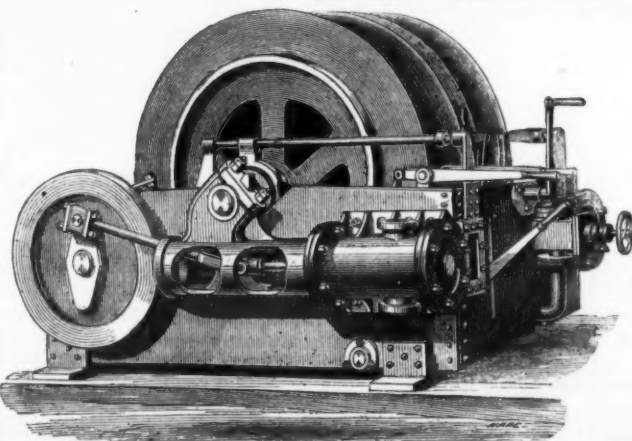
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W. H. WILTON begs to thank his friends for their liberal support for so many years, and informs them that (having opened business at Valparaiso) he has now declined business in England in favour solely of Mr. A. JEFFERY, MATHEMATICAL INSTRUMENT MAKER, CAMBORNE, whom he considers (having been an assistant to his father for several years) is in every way capable of creditably maintaining the good name universally awarded to Wilton's instruments.

A. JEFFERY

Respectfully begs to inform Mine Managers, Surveyors, Engineers, &c., the having purchased Mr. Wilton's business, and the very valuable acquisitions and appliances belonging thereto, he has enlarged his Mathematical Instrument Manufactory, and is prepared to supply THEODOLITES, DIALS, POCKET DIALS, LEVELS, TRAVELLING AND PLAIN PROTRACTORS, CASES OF DRAWING INSTRUMENTS, MEASURING CHAINS AND TAPES, ASSAYERS' SCALES AND WEIGHTS, ENGINE COUNTERS, and, in short, every description of Instruments used in SURVEYING, MEASURING, MAPPING, &c.
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Size 40 by 56 inches, scale 5 miles to the inch. Handsomely engraved, coloured in counties, showing the Towns, Settlements, Rivers, Lakes, Railroads, Mining Districts, &c., throughout the Territory, and all the Government Surveys to date. Mounted on cloth, £2; half-mounted, £1 12s.; pocket form, £1.
Also, GENERAL MINING MAP OF UTAH, showing twenty-eight of the principal Mining Districts adjacent to Salt Lake City, and location of the most prominent mines. Price, pocket form, 6s.
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NEW CATALOGUE, WITH REVISED
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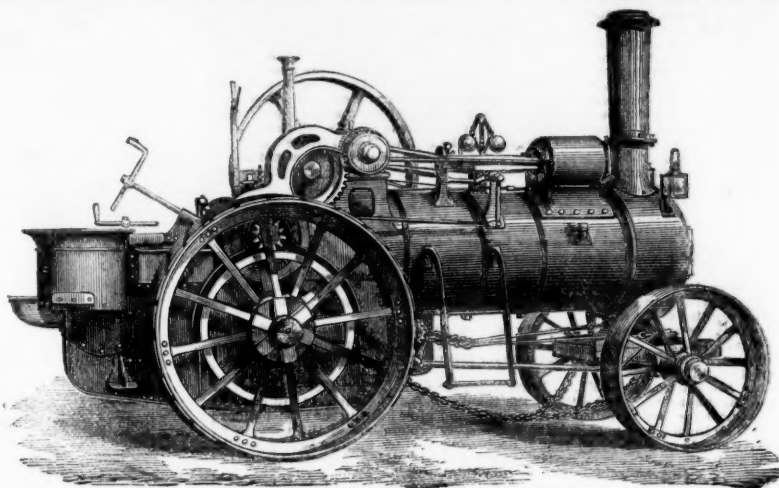
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Wagons.

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THE OILED CLOTH IS ESPECIALLY RECOMMENDED FOR DAMP MINES, AND IS ALSO A GOOD COVERING FOR SHEDS.
THE NON-INFLAMMABLE FOR THE MORE DANGEROUS MINES.

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FOR MINING AND QUARRYING PURPOSES.

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Patent Improved Blake Stone Breakers.

GUARANTEED NO INFRINGEMENT OF ANY PATENT.

AWARDED PRIZE MEDAL,

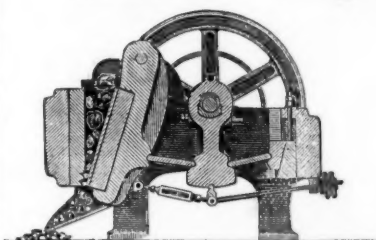
In competition with the best-known Stone Breakers,
September 7th, 1876,

Formerly Manufacturers for the late H. R. Marsden, having made for him in less than four years 336 Stone Breakers.

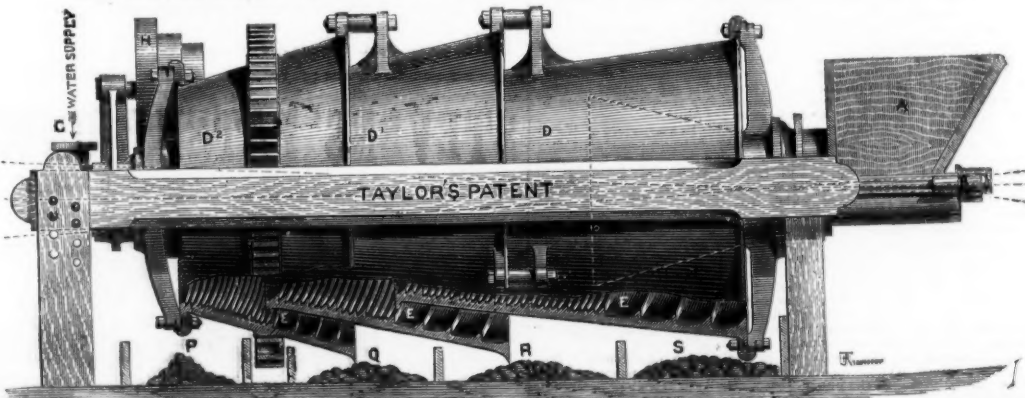
ESTABLISHED 1836.

Prices and particulars on application to the Patentees and Sole Makers,—

ROBT. BROADBENT AND SON, STALYBRIDGE.



FIRST SILVER MEDAL AWARDED BY THE ROYAL CORNWALL POLYTECHNIC SOCIETY, 1876.



TAYLOR'S PATENT DRUM DRESSER,

FOR SEPARATING AND SIZING MINERAL AND OTHER SUBSTANCES.

By the aid of this invention any materials, which are of different specific gravity, can be concentrated and sorted mechanically, while in the case of ores the fine mineral is brought up with the larger particles instead of being washed into the waste—a most important feature.

This machine uses very little water in proportion to the quantity of material treated, and will be found a most useful and efficient dressing apparatus.

For further particulars, and to see machines at work, apply to the Patentee,

H. E. TAYLOR, 15, Newgate Street, Chester.

PATENT
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- "2. Its simple construction ensures durability, &c.
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- "6. Its greater steadiness and absence of jar and vibration experienced in other drills, which is very destructive to their working parts, &c.
- "7. Its greater power is some FORTY PER CENT. in favour of the Ingersoll."

Medals awarded for several years in succession "For the reason that we adjudge it so important in its use and complete in its construction as to supplant every article previously used for accomplishing the same purpose."

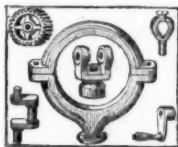
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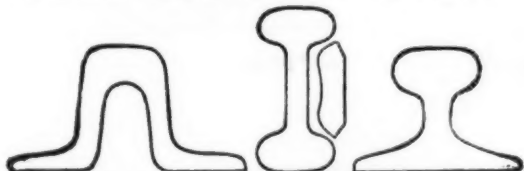
MALLEABLE IRON CASTINGS,
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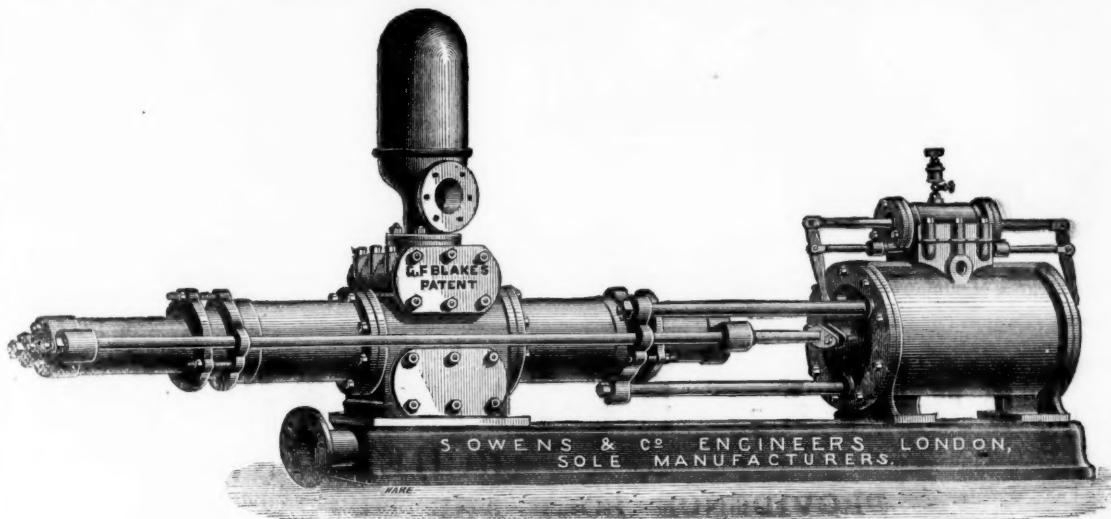
BLAKE'S PATENT STEAM PUMP.

MORE THAN 10,000 IN USE.

SOLE MAKERS FOR GREAT BRITAIN,

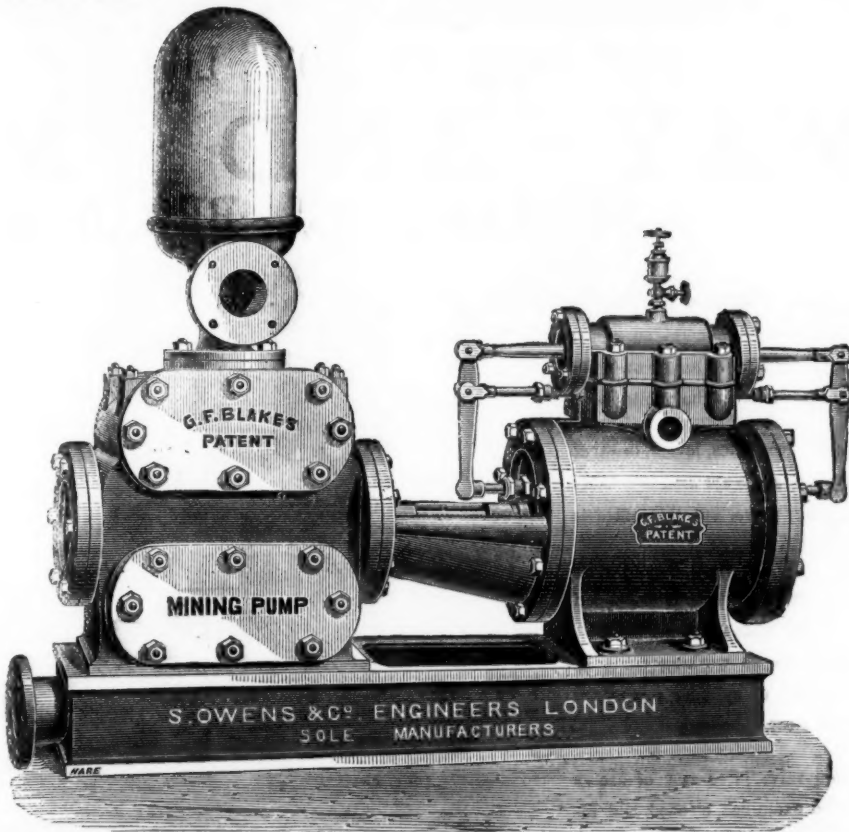
S. OWENS & CO.,
 Hydraulic and General Engineers, Whitefriars-street, London;
 Agent in Scotland: W. Hume, 195, Buchanan-street, Glasgow.

These PUMPS from their SIMPLICITY, RELIABILITY, DURABILITY, and ECONOMY are SPECIALLY SUITED FOR MINING PURPOSES, where large quantities of water require to be raised from great or medium depths with CERTAINTY. They are double-action in their construction, throwing a constant stream of water, can be made of any stroke to suit the space in which they have to work, can be arranged with any combination of steam and water cylinders to suit the pressure and lift against which it is desired to work them, are made of the very best materials and highest class of workmanship, and all working parts can be readily got at by any ordinary workman, and replaced if necessary by a duplicate part (all such being interchangeable) in the shortest possible time. For situations where gritty and sandy water has to be pumped the DOUBLE-PLUNGER PATTERN is recommended. Where space is limited the PISTON PUMP is better suited, a novel feature of which is the PATENT REMOVEABLE LINING, which can be removed in a few minutes and substituted with a new one, without disturbing any other part of the pump.



Blake's Improved Double-plunger Steam Pump.
S. OWENS AND CO.,

In placing 'the' BLAKE STEAM PUMP before the mining world, believe they are offering the BEST, MOST RELIABLE, and ECONOMICAL PUMP that has yet been made, and solicit an inspection of various sizes in operation at their works, Whitefriars-street, Fleet-street, London.



Blake's Improved Mining Pump, with Patent Removeable Lining to Pump Cylinder,

Any combination of these Pumps may be had to suit circumstances. The following are some of the SIZES SUITABLE FOR MINING PURPOSES:—

Dia. of steam cylinders.. In.	12	12	12	12	14	14	14	16	16	16	16	18	18	18	18	20	20	20	20	24	24
Dia. of water cylinders.. In.	3	4	5	6	4	5	6	4	5	6	8	4	5	6	8	5	7	8	9	6	8
Length of stroke... In.	18	18	18	24	24	24	24	24	24	24	24	24	30	30	30	30	36	36	36	42	
No. of strokes per minute..	30	30	30	30	25	25	25	22	22	22	22	22	22	22	22	20	20	17	17	15	
Quantity in gallons per hour, approximately... }	1440	2610	4200	5940	2940	4620	6800	2646	4158	5940	10620	2646	5160	7500	13260	4586	9000	12360	15660	6720	12000

PRICES FOR THE ABOVE, OR ANY SPECIAL SIZE, AND ILLUSTRATED CATALOGUES FURNISHED ON APPLICATION.

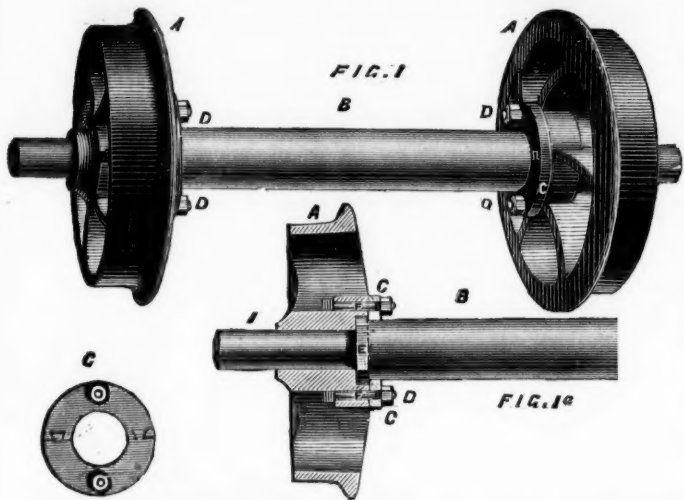
PATENT CONDENSERS

Can be supplied for any size pump to effect a saving of fully 30 per cent. in the consumption of fuel, greatly increasing their efficiency

The Blake Pump will work under water, and as efficiently with compressed air as with steam.

BLAKE'S DONKEY PUMPS FOR FEEDING BOILERS KEPT IN STOCK.

JOSEPH FENTON & SONS,
SYKES WORKS, SHEFFIELD, and 118, Cannon-street, LONDON, E.C.,
MANUFACTURERS OF
CRUCIBLE CAST STEEL CASTINGS,
HAVE PLEASURE IN CALLING THE ATTENTION OF THE MINING WORLD TO THEIR
Patent Method of Fitting up Cast Steel Wheels and Axles.

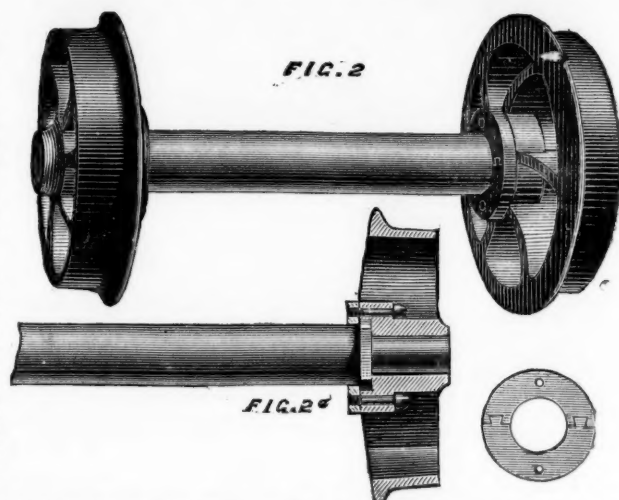


Figs. 1 and 1a show a longitudinal view and plan of a pair of corf wheels and axles fitted up for outside bearings. A A, are the wheels; B, is the axle; C C, the washers; D D, the bolts; E, the collar on axle B; and F, the recessed boss in the wheel.

The wheel is cast with a recessed boss in the inside, made to any shape, corresponding in shape and depth with a collar formed on the axle. Figs. 2 and 2a show a longitudinal view and plan of a pair of corf wheels fitted up for inside bearings. The washers are secured to the boss of the wheel in outside bearings by bolts and nuts, and in inside bearings by set screws.

The advantages of the above system are:—A, the singular simplicity of fitting—enabling any inexperienced person, with the aid of a spanner or screw-driver, to detach the wheels from the axle or fit them together in a very short time. B, perfect solidity, the wheels and axles becoming as one piece. C, durability, no need of putting the wheels or axles into the fire, under any circumstances, which is so detrimental to wheels, rendering them remarkably brittle, and which under other systems are detached from the axle by the aid of fire. D, economy in fuel and wages, saving hundreds of pounds yearly to large coal owners. The

important desiderata secured by this invention of simplicity (so often wanted in patents), solidity, durability, and economy, have not only been amply illustrated by the technical journals interested in the progress of mining operations in this country, but have at once been fully recognised by leading authorities in the mining world.



BOLTS, NUTS, AND COACH SCREWS.

ARCHER AND HARPER,

PROVIDENCE BOLT AND NUT WORKS, THE GREEN, DARLASTON,
Manufacturers of all kinds of Shipbuilders', Engineers', Coach, Wagon, and Fish Bolts; Coach Screws; Railway Spikes and Brobs; Hor-
pressed and Forged Nuts, Rivets, Washers, &c., &c.

SHIPBUILDERS' AND RAILWAY STORES' CONTRACTORS.



COLEBROOK'S PATENT STEAM PUMPS,
FOR HIGH OR LOW LIFTS AND GENERAL PURPOSES.

SOLE MAKERS,—

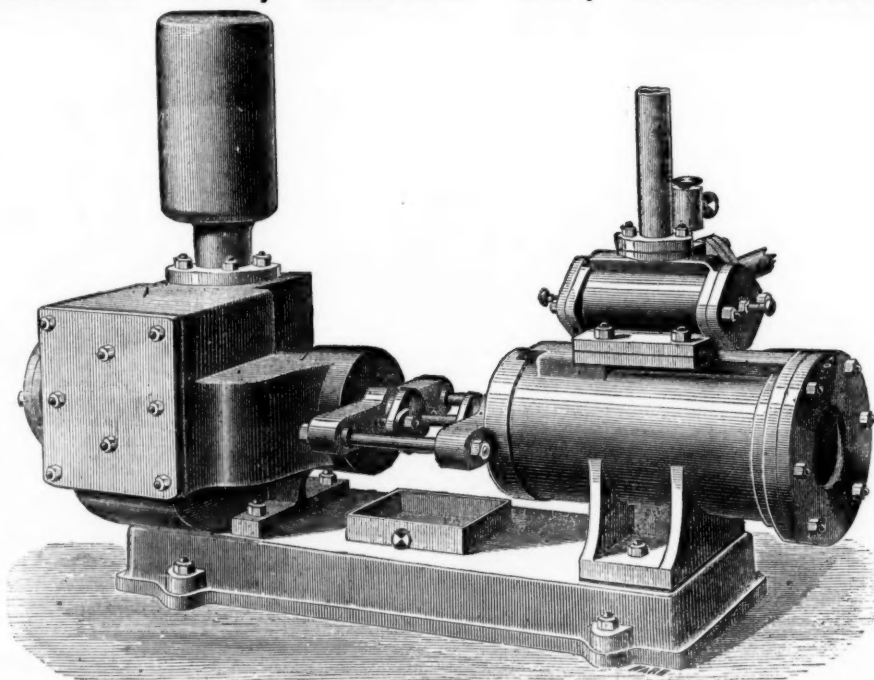
MAY AND MOUNTAIN,
BERKLEY ST., BROAD ST., BIRMINGHAM.

The accompanying Engraving represents a Steam Pump, suitable for general purposes; it possesses the following advantages over any other Steam Pump yet before the public:—

1st.—No tappets, eccentrics, levers, or other mechanical appliances are used to actuate the steam slide valve, but this office is performed by the exhaust steam.

2nd.—The only working parts in the steam cylinder are the piston and slide valve, and as there are no working parts in either the piston or cylinder covers, the full length of stroke is obtained.

3rd.—The slide valve is so easy of access that it can be examined, cleaned, and replaced in a few minutes, and it is impossible to make any error in replacing it



after examination, because it is immaterial which way it is inserted in the valve-box, whether one way or the other upwards, or whether end for end.

The Pump Valves are Colebrook's Patent, and are made in one piece. They are either of canvas, leather, india rubber, or other material, to suit the nature of the liquid to be pumped, and can be replaced in a very short time by any ordinary workman.

These Pumps are suitable for hot or cold water, hot or cold wort, sewage, ammoniacal liquor, tar, &c., and are adapted for use in breweries, chemical works, collieries, paper mills, dye-works, brick-yards, and for almost any other purpose.

SIZES AND PRICES OF COLEBROOK'S PATENT STEAM PUMPS.

Diameter of Steam Cylinder.....Inches	1½	3	3	3	3	4	4	4	4	5	5	5	6	6	6	6	7	7	7	7	7	8
Diameter of Pump Cylinder.....Inches	1	1½	2	2½	3	2	2½	3	4	3	4	5	3	4	5	6	3	4	5	6	7	4
Length of Stroke.....Inches	6	12	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Price	£12	£16	£17	£18	£19	£19	£20	£22	£25	£23	£28	£32	£26	£33	£36	£41	£30	£38	£41	£45	£52	£40
Diameter of Steam Cylinder.....Inches	8	8	8	8	9	9	9	9	9	10	10	10	10	10	10	12	12	12	12	12	12	...
Diameter of Pump Cylinder.....Inches	5	6	7	8	5	6	7	8	9	5	6	7	8	9	10	6	7	8	9	10	12	...
Length of Stroke.....Inches	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	...
Price	£45	£50	£56	£65	£50	£55	£60	£70	£81	£62	£68	£70	£80	£95	£100	£80	£85	£90	£100	£115	£135	...

AWARDED THE PRIZE MEDALS AT LEEDS, MANCHESTER, AND WREXHAM EXHIBITIONS, 1875 AND 1876.

HADFIELD'S STEEL FOUNDRY COMPANY,

ATTERCLIFFE, SHEFFIELD,

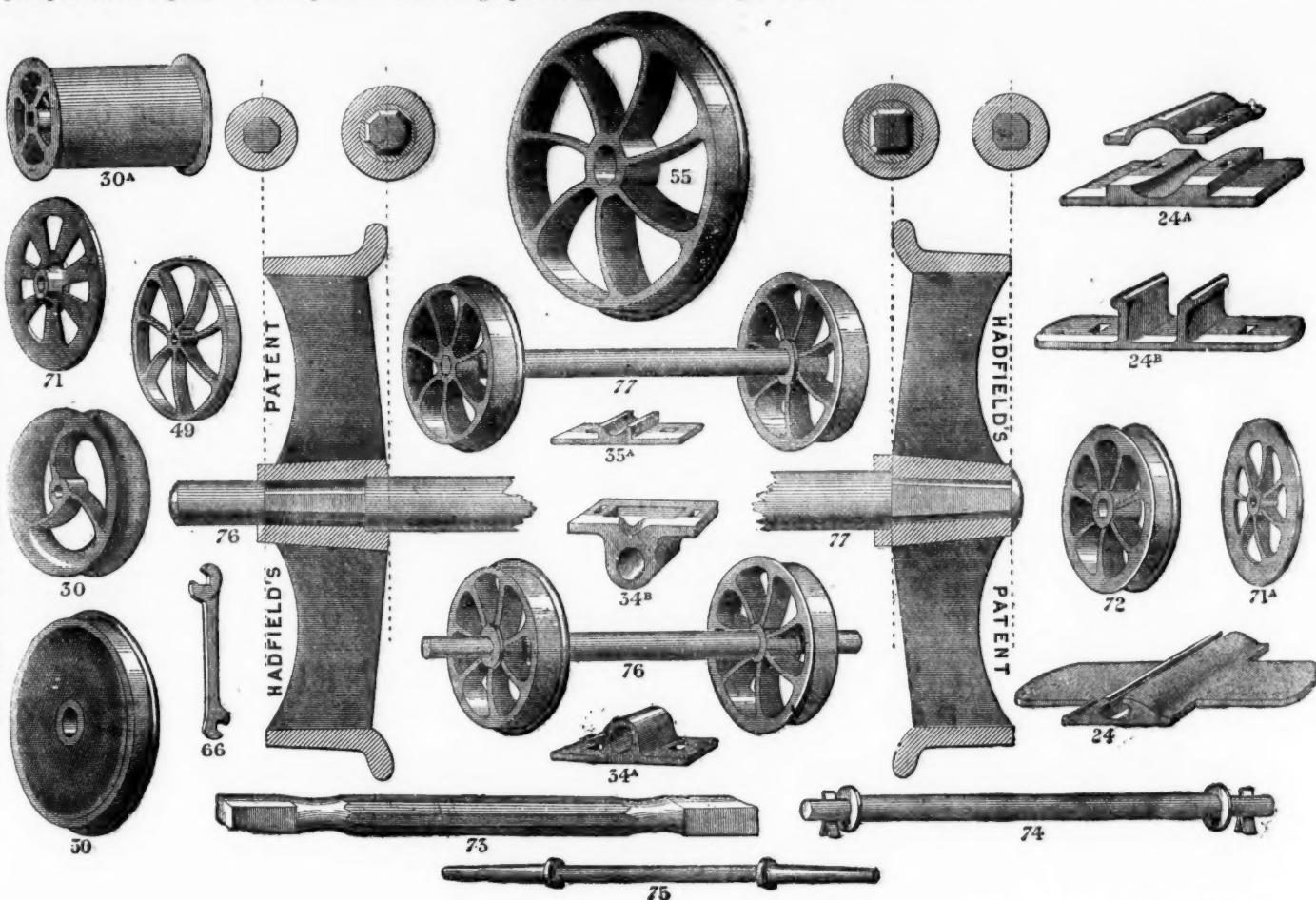
DEVOTE THEIR EXCLUSIVE ATTENTION TO THE MANUFACTURE OF

CRUCIBLE STEEL CASTINGS, for Engineering and Machine Purposes,

HADFIELD'S CRUCIBLE STEEL WHEELS.

One of our departments is specially adapted for the manufacture of these Wheels (as shown below), for Collieries, Ironstone Mines, Slate Quarries, Ironworks, Lead Mines, &c., &c. We have made, and are now making, many HUNDRED THOUSANDS; and having Patented a New Method of Fitting Wheels upon axles, being cheap, effective, and expeditious, we can execute orders entrusted to us with promptitude, our capacity in this department alone being equal to about 2000 wheels per week.

N.B.—Prices per Set of Wheels and Axles, fitted complete, forwarded on receipt of diameter of wheel on tread, depth of tread, real gauge, and thickness of axles and rolling load.



[This Sheet of Drawings is Copyright.]

HADFIELD'S PATENT METHOD OF FITTING WHEELS UPON AXLES.

The advantages of the above system are that the Wheels being forced upon a Taper Square-ended Axle, by Machinery, and then riveted (the machine securing truth), it is impossible that they can come loose or get within gauge. They are very heavily fitted on, and run exceedingly true.

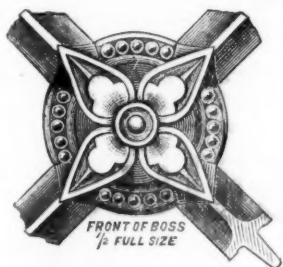
We construct the Arms of wheels upon the curved principle (as shown in the drawings above), consequently the shrinkage or cooling of the Castings is not interfered with, thus securing the greatest advantages of our very strong material.

CRUCIBLE CAST-STEEL WHEELS, when cast by us, are made from one-third to one-half lighter than Cast-Iron. They cannot be broken while working, even with rough usage, and will wear at least twelve times as long as Cast-Iron, thus saving animal and steam power, and reducing wear and tear immensely.

We would also draw special attention to our INCLINE PULLEYS and CAGE GUIDES, the adoption of which will prove highly advantageous.

HARRIS'S PATENT WROUGHT-IRON WINDOWS.

DOME AND OTHER ROOF LIGHTS, FLOOR AND PAVEMENT LIGHTS, ETC.



GREAT BRITAIN,
UNITED STATES OF AMERICA,

ARE STRONGER, SUPERIOR, AND CHEAPER
THAN ANY OTHER METAL SASHES YET
PRODUCED—COST LESS FOR GLAZING—
ARE AS CHEAP IN MANY CASES AS WOOD

Private Houses,
Parsonage Houses,
Farm Houses,
Churches,
Chapels,
Schools,

ILLUSTRATED CATALOGUES
ON APPLICATION.

In Basement Storeys and Exposed Positions Shutters
and Guard Bars are dispensed with.

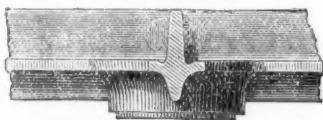
HOME AND

SOLE MAKER—J. T. HARRIS, Engineer, Ironfounder, and Manufacturer,

SAFE, STRONG ROOM, AND PARTY WALL DOORS, AND EVERY KIND OF CONSTRUCTIONAL AND BUILDERS' IRONWORK, LIFTS, HOISTS, ELECTRIC BELLS AND TELEGRAPHS, &c.

90, CANNON STREET, LONDON, E.C.; AND BEAUFORT IRONWORKS, BRISTOL.

PATENTED IN



FRANCE,
GERMANY, AND BELGIUM.

—CAN BE DESIGNED AND MANUFACTURED
TO SUIT ANY STYLE OF ARCHITECTURE
OR POSITION WHERE A WINDOW MAY BE
REQUIRED.

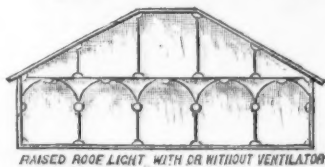
ARE BEING EXTENSIVELY USED IN—

Lunatic Asylums, &c.,
Public Buildings, Banks,
Wharves, Warehouses,
Factories, Mills,
Breweries, &c.,
Engine Houses.

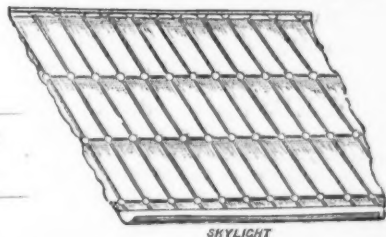
ILLUSTRATED CATALOGUES
ON APPLICATION.

Security is obtained in
these Skylights with-
out Guard Bars, and
with less obstruction
to Light.

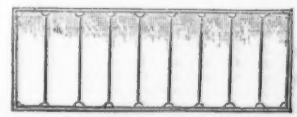
EXPORT.



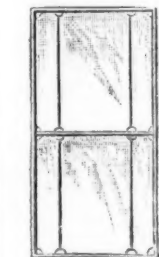
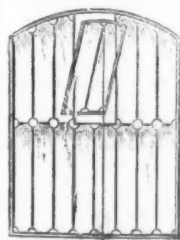
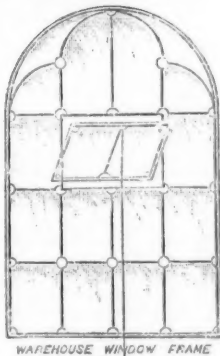
RAISED ROOF LIGHT WITH OR WITHOUT VENTILATOR



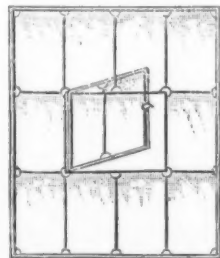
SKYLIGHT



FLOOR OR PAVEMENT GRATING FOR GLAZING

PAIR OF SASHES
TO RUN WITH WEIGHTSWATER-TIGHT
WINDOWSBASEMENT SASH
NO GUARD BARS OR
SHUTTER REQUIREDSECTION OF OUTER
FRAME WITH BARS
ROLLED ONSECTION OF OUTER
FRAME OF BARS
TO RUN

WAREHOUSE WINDOW FRAME



FACTORY OR MILL WINDOW FRAME

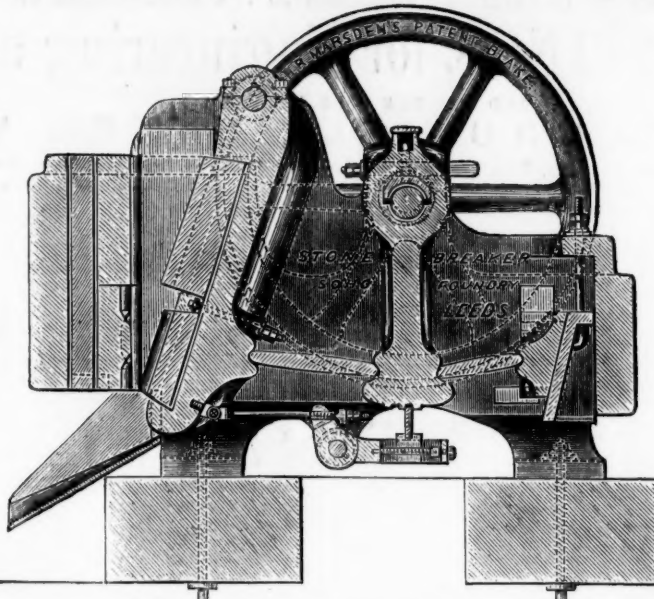
H. R. MARSDEN, PATENTEE AND ONLY MAKER BLAKE MACHINES, OF THE WELL-KNOWN ORE CRUSHERS AND STONE BREAKERS,

WITH THE
New Patent Reversible
CRUSHING OR CUBING
JAWS,

WHICH ARE CONSTRUCTED OF A PECULIAR
MIXTURE OF METAL, WEARING
Four times longer than any
other.

60 GOLD AND
SILVER MEDALS.

OVER 2000 NOW IN
USE.



For Crushing to any degree
of Fineness, or Breaking
to a required size.

Her Majesty's Government
USE THESE MACHINES
EXCLUSIVELY,
ALSO ALL THE GREAT
Mining Companies of the
World.

H. R. M. has long observed the want of cheaper
machines,
STONE AND ORE CRUSHERS,
And has at length, by means of improved appliances
for the production thereof, been enabled to reduce
the prices, yet keep up at the same time the well-
known strength of construction. Reduced prices
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